ARCHIVES OF OPHTHALMOLOGY.

THE CLINICAL SIGNIFICANCE OF THE SO-CALLED AMYLOID TUMORS OF THE CONJUNCTIVA, WITH A REPORT OF THEE NEW CASES.

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I.—*Cases of so-called amyloid tumor of the conjunctiva.**

In the subjoined compilation of cases I have chiefly considered their clinical phenomena, and have given less notice to the histology and pathology, for which I refer the reader to the original papers, above all, the latest of them, that of Prof. Raehlmann, published in the previous volume (x, p. 171, etc.) of these Archives, under the title of "Amyloid Degeneration of the Conjunctiva."

Case 1.—Oettingen: Die ophthalmologische Klinik Dorpat's, 1871, page 49, etc. Kyber: Studien ueber die amyloide Degeneration; erste Abth., 1871.

Case 2.—Oettingen: *l. c.*, p. 51. Kyber, *l. c.*, p. 135.

Case 3.—Saemisch: Sitzungsberichte der Niederrhein. Gesellsch. f. Nat., etc., March 17, 1873; Bonn. H. Vogel: Ueber Perichondritis des Tarsal-Knorpels; Inaug. Diss., Bonn, 1873, p. 13.

Case 4.—Leber: *Graefe's Archiv*, Band xix, Abth. 1, p. 163.

Case 5.—E. J. v. Becker: Amyloid Degeneration af tarsi. Finska Läkaresällskapets Handlinger, Band xvii, 1874.

* The report of the previously published cases has been suppressed in the English version of this paper; the bibliography, however, is left. A well-marked case published by Drs. Prout and Bull in these Archives (vol. viii, p. 73, etc.) has been overlooked by the author. Editor.

Mentioned in Stroehmberg, "Ein Beitrag zur Casuistik der amyl. Degen.," etc., p. 13, Dorpat, 1877.

Mooren, "Ophthal. Mittheil. aus d. Jahre 1873," Berlin, 1874, p. 27, has occasionally seen amyloid degeneration of the conjunctiva, although he reports no special cases, and seems never to have verified his diagnosis with the microscope.

Case 6.—Narkiewicz-Jodko: "Trzecie sprawozdanie z. Instytutu oftalmicznego," etc. Warsaw, 1874. This case has been translated by Zwingmann.

Case 7.—Braun: Annal. der chirurg. Gesellsch. zu Moskau, 1875.

Case 8.—Reymond: *Annali di Ottalmologia*, anno iv, 1875, p. 349.

Case 9.—Kyll: Die amyloide Degeneration, etc. Inaug. Dissert., Bonn, 1876, p. 21, etc.

Case 10.—Stroehmberg: "Ein Beitrag zur Casuistik der amyloiden Degeneration," etc. Dorpat, 1877, p. 16, etc.

Case 10*a*.—Zwingmann: "Die Amyloidtumoren der Conjunctiva." Inaug. Diss., Dorpat, 1879, p. 75, etc.

Case 11.—Zwingmann: *l. c.*, p. 23.

Case 12.—Narkiewicz-Jodko: Compare Zwingmann, *l. c.*, p. 21.

Case 13.—Quaglino and Guaita: *Annali d'Ottalmologia*, anno vi., 1877, p. 163.

Case 14.—Mandelstamm and Rogowitsch: *Graefe's Archiv*, Band xxv, Abth. i, p. 248.

Case 15.—Leber: *Graefe's Archiv*, Band xxv, Abth. 1, p. 262.

Case 16.—Hippel: *Graefe's Archiv*, Band xxv, Abth. 2, p. 2.

Case 17.—Zwingmann: *l. c.*, p. 114.

Case 18.—Zwingmann: *l. c.*, p. 120.

Case 19.—Zwingmann: *l. c.*, p. 130.

Cases 20, 21, and 22.—Adamük: Three cases published in Russian. These ARCHIVES (German edition), vol. x, 448.

Case 23.—Zwingmann: *l. c.*, p. 150.

Cases 24 to 27.—Raehlmann: these ARCHIVES, vol. x, p. 171, etc.

CASE 28.—M. S., æt. 32, field laborer; has never been ill, and is at present in robust health. He has suffered for twenty years from persistent lachrymation and slight photophobia. The "proud flesh," as the patient calls it, which is visible between the eyelids of both eyes has been there, according to his statements, for twelve years, but has never previously caused him any trouble. In the last few weeks, however, the tumors have increased so much in size that they obscure the vision of both eyes. The patient has also suffered for the last fortnight with violent pain and photophobia in the right eye, accompanied with diminution of vision.

Right eye.—The lids are voluminous, and pushed evenly forward like a pillow. The upper lid droops a great deal. The opening of the lids, which is generally so slight as only to allow a narrow strip of the cornea to be visible, can with the greatest effort, and assistance of the muscles of the forehead, be enlarged sufficiently to uncover two thirds of the cornea and an overhanging reddish and glistening tumor. The tension of the lower lid is slight; of the upper lid, well marked. On palpation of the lids we feel in the deeper portions of the lower lid, and apparently attached to the tarsus, an elastic, yielding tumor; in the upper lid a knotty tumor, the inner half of which seems to be hard like cartilage. After easily everting the lower lid, the conjunctiva near the commissure of the eyelids is seen to be thickened, and of a grayish-yellow tinge, over an extent of 3–4 *mm.*; the surface appears slightly granular, although there are no true granulations or follicles present. Several striped and superficial conjunctival cicatrices begin at a distance of 3–4 *mm.* from the inner edge of the lid, extend directly to the conjunctiva of the globe, and terminate just beneath the limbus corneæ. The conjunctival fold which has thus been bridged over is filled up with a brownish-red, transparent, inelastic tumor having a smooth surface which is covered with several coarse vessels.

The plica semilunaris has degenerated into a knobby tumor half as large as a walnut (intimately connected with the tumor in the lower fold), embracing the conjunctiva of the eyeball, and extending from the inner commissure to the edge of the cornea. A slender process extends like a curtain from this tumor to the middle of the cornea. The surface of the tumor is smooth, marked with a few vessels, and of a dark red color. At the inner commissure, the tumor is elastic and coarse; at the curtain-like process inelastic and smooth. The upper part of the tumor passes off into a comb-

like projection which extends from the upper conjunctival fold and bulbar conjunctiva to the limbus corneæ and also gives off a curtain-like process downward. The projection then extends into the external commissure, where it unites with the tumor on the lower conjunctival fold. This portion of the tumor resembles the other in color and consistence.

The upper lid cannot be everted owing to its extreme tension. But when it is drawn as far as possible away from the eyeball, the conjunctiva is found to be thickened, brownish, and finely granular as on the lower lid. The thickening seems most marked toward the inner commissure, in correspondence with the hard nodule which is felt on palpation of the lid. The tumor, therefore, springs from the retrotarsal fold, the conjunctiva of the eyeball, and the plica semilunaris, and embraces the whole anterior segment of the globe in the form of a ring, in the centre of which lies the cornea. The upper and inner quadrant of the cornea, corresponding to the curtain-like projections of the tumor, is marked by a deep excavated ulcer, with ragged edges and infiltrated base.

The condition of the *left eye* is about the same: the tumor has the same form and occupies the same region. But it is a trifle smaller. The surface is glistening and smooth; the tint is brownish-yellow, wax-like, or glassy. Above, the tumor is elastic and coarse; elsewhere, elastic and soft. The cornea is not so extensively covered by the tumor as in the right eye. The inner portion shows a small and superficial loss of substance. S R $\frac{20}{200}$; S L $\frac{20}{20}$. Ref. both Em.

Therapeutics: Aug. 21, 1880.—*Right eye:* Those portions of the tumor which extended over the cornea and caused the ulceration of that tissue were excised.

Nov. 20*th.*—A piece as large as a bean was excised from the tumor on the lower fold.

Aug. 31*st.*—*Left eye:* The degenerated caruncle and plica semilunaris, which were then as large as the kernel of a walnut, were extirpated.

Sept. 19*th.*—The external commissure was divided, and two pieces as large as a bean excised from the tumor in that region. The operations were followed by slight hemorrhage. The after-treatment consisted in the application of a 2-per-cent. solution of boracic acid every two hours. A light antiseptic bandage was subsequently applied. The wounds healed in a day or two with-

out any reaction. After removing the overhanging portion of the tumor in the right eye, and using atropine, the corneal ulcer soon healed. An ulcer which made its appearance on the inner portion of the left cornea, after the removal of the tumor attached to the plica semilunaris and caruncle, recovered rapidly under the same treatment.

Every excision was followed by retrogressive metamorphosis in the remaining portions of the tumor. This process consisted in a very gradual diminution and shrivelling of the tumor, which, however, did not change very much except to become more yielding. The bunches which sprang from the conjunctival fold also shrivelled and left the conjunctiva in a nearly normal condition. When the patient was discharged, Dec., 1880, his condition was as follows:

The eyelids are still swollen, but not so much as before; the ptosis of the upper lids is much diminished. The tarsus in both lids feels moderately thickened, and at the inner half of the right upper lid is as large as a bean. The surface of this portion feels granular, while in consistence it is hard and elastic. A thick cicatrix, parallel to the edge of the lid, is visible in the conjunctiva of the right lower eyelid, the external commissure, and the outer half of the lid. Everywhere else the conjunctiva is red, slightly thickened, and rather yielding. The upper eyelid cannot be everted; its conjunctiva is in about the same state as that of the lower lid. A flabby fold, corresponding to the previous tumor, falls from the retrotarsal portion. The cornea is slightly hazy.

Left eye: Thick cicatrices are visible in the inner portion of the conjunctival sac near the plica and caruncle, but they do not hinder the motions of the eyeball. The conjunctiva and cornea are in the same condition as those of the right eye.

Microscopic conditions.— The various portions of the tumor were hardened in alcohol and tinted separately with an ammoniacal solution of carmine, and a solution of hematoxylin in alum. The reagents for the amyloid were the iodine solution of iodide of potasium, diluted sulphuric acid (*cf.* Böttcher: *Virchow's Archiv*, lxxii, page 510, *et seq.*), and subsequently methyl violet in iodine.

Specimens from the *left eye.* None of the reagents gave a decided amyloid reaction. The iodine and sulphuric acid treatment produced a bluish shimmer at one or two places. The methyl violet failed entirely.

Adenoid tissue was found in the whole thickness of the tumor,

after cutting through several layers of pavement epithelium, two or three layers of polyhedral cells, and a layer of cylindrical cells. The polyhedral cells, which were precisely like lymphoid cells, were thickly spread throughout a network of fine, stiff, pale fibres, in the nodal points of which numerous granules were visible.

The tissues in the deeper layers, as well as close beneath the epithelium, *refracted light in a marked degree.* The cells, as a whole, appeared more voluminous, but not so much so that the possible increase in size could have been mathematically demonstrated by accurate measurements. The body of the cell was less granular than usual; unmistakably homogeneous. The nuclei were distinctly paler and less highly developed than in the neighboring and unaltered districts. They were often rudimentary, and absent from many cells. Exuberant structures, which evidently originated from a coalescence of the metamorphosed cells above described, were occasionally visible. Vessels were infrequent, and their walls always intact. I saw a single artery with a peculiarly homogeneous media, glassy and remarkably broad. But no trace of any reaction could be discovered.

The deeper layers of the tumor were occupied by a loose, fibrous connective tissue with large meshes, interspersed with a few elastic fibres and numerous fat-cells. This was evidently subconjunctival tissue which had been pushed forward from the epithelium by the pathologically increased adenoid tissue. The vessels were rather coarse.

Right eye: The pieces taken from the tumor at the upper conjunctival fold gave an exquisite amyloid reaction. The potash-iodine solution alone gave an instantaneous dark greenish-blue reaction, while the addition of sulphuric acid gradually increased this tint to a more or less pure blue.

Several layers of stratified pavement epithelium which had been badly preserved, covered a narrow strip of fibrous connective tissue which contained a few cellular elements. Beneath this lay a confused mass of amyloid clumps and structures in the various shapes so well figured by Zwingmann. The tissues at this region had degenerated so excessively that their structure could no longer be made out.

The piece excised from the tumor at the lower conjunctival fold was of the same microscopic structure as the specimen from the left eye.[1]

[1] This case is identical with the one described by Zwingmann: *l. c.*, p. 144.

CASE 29.—*Sept.* 3,1880. M. T., æt. 32, a healthy peasant girl, has suffered from an affection of the eyes for one year and a half. She complains of increased sensibility, redness, and lachrymation of the left eye.

Right eye: Conjunctiva slightly injected; no trace of trachoma.

Left eye: Slight ptosis, both lids voluminous and projecting. The bluish skin can be easily moved over the tarsus. The orbital edge of the upper tarsus feels thickened. The conjunctiva of the lower lid is deep-red, thickened, and succulent; its surface smooth. The lower conjunctival fold is occupied by a grayish-yellow, soft, and elastic ridge 2 *mm.* thick and 3 *mm.* high, which extends from the hypertrophied plica to the external commissure. The upper lid is considerably stretched so that some force is needed to evert it. The tarsal conjunctiva is thickened and evenly red; the surface uneven but not from granulations or lymph follicles. The subconjunctival tissue of the conjunctival fold is everywhere *considerably* thickened but elastic, the surface smooth and red. The upper portion of the cornea is slightly abraded. Soon after the patient's reception to the hospital, an ulcer formed in this region and extended rapidly downward.

Treatment.—Frequent instillation of atropia and energetic cauterization of the conjunctiva with the copper crayon. The ulcer soon healed, and the cauterizations seemed to act favorably upon the neoplasm, although it did not noticeably retrograde.

Microscopic examination of a piece of the ridge-like tumor revealed conditions similar to those already described in Case 28, although less marked.

CASE 30.—*Dec.* 17, 1880. A. K., æt. 21, a healthy peasant girl, has suffered with an affection of the eyes for three months. The disease began with a slight "inflammation" of both eyes and continued for eight days. The right eye then became well, while the left upper eyelid began to swell, so that in three or four weeks vision was very much interfered with. Various remedies proved of no avail.

Right eye: Conjunctiva everywhere injected and the upper fold thickened. A small granulation lies near the outer commissure.

Left eye: Total blepharoptosis. The upper lid projects enormously: horizontally, it measures 54 *mm.*; vertically, 33 *mm.* It falls completely over the lower lid. The skin is tense, smooth, well marked with varicose veins; all its folds have disappeared, while near the commissure it is quite brown and thickened. Pal-

pation discovers hard knotty masses like cartilage, which can be easily moved over the orbital margin. The upper lid cannnot be everted. On pulling it out as far as possible from the eyeball, large round masses, evidently arising in part from the tarsal conjunctiva roll into sight. They are yellowish-red, rather translucent, elastic, and hard, with a smooth surface. The caruncle and plica semilunaris have degenerated in a similar manner. The lower lid is intact; the conjunctiva swollen but smooth. The cornea is normal.

The patient reported again, Jan. 17, 1881. The tumor of the left upper lid has increased considerably in size. The lid now measures horizontally, 65 *mm.*; vertically, 40 *mm.* The skin of the lid is brown over a much larger extent of surface than before.

Treatment: February, 15, 1881.—After slitting the left external commissure and everting the upper lid, the tumor was partially excised with the scalpel, great care being taken to spare the conjunctiva. When heaped together, the fragments were as large as a crab-apple. The hemorrhage was very slight. A light bandage with salicylic cotton was applied. The conjunctival sac was irrigated every hour on the following days with a 2-per-cent. solution of boracic acid. The case recovered in a fortnight without any reaction. The remaining masses gradually diminished in size until the day of the patient's discharge (February 28, 1881), but were still quite hard.

A hasty microscopic examination revealed the same general conditions as already described in Case 28 (left eye).

II.—*The clinical significance of the so-called amyloid tumors of the conjunctiva.*

The age of the thirty patients with amyloid tumors of the conjunctiva varied between 13 and 55 years: 8 cases between 10 and 20; 14 between 20 and 35; 8 over 35, *i.e.:* most of the tumors were observed between the ages of 20 to 35. Zwingmann (*l. c.* pag. 146) draws the same inference from fifteen cases only, and suggests that trachoma also appears about the same age. But we are to remember that the value of such a comparison must be slight from other grounds, to say nothing of its very weak numerical basis. For the age which the patients gave is not that at which the disease first became developed in their eyes, but their

age when they first consulted the oculist. Moreover, in such cases as these which are of a distinctly chronic nature and accompanied with symptoms of but slight significance, the patients hardly know how long the affection has lasted, so that the question of age is subject to many variations.

Of the 30 cases of amyloid tumor, 13 were observed in women, 17 in men.

The general condition of the patient was good in 16 of the 30 cases. In 8 others, various statements were made of anæmia, swelling of the lymphatic glands, and syphilis, but they do not seem to indicate any connection between the general condition and the local manifestation of the disease in the eye.

Amyloid tumor of the conjunctiva is an extremely chronic affection; it usually requires several years for development, and its growth is mostly slow. Of 24 cases, 12 lasted from 3 to 12 years; 6 from 1 to 2 years; 6 less than 1 year. These figures, however, are not wholly reliable, because they are based entirely upon the statements of the patients. Still, they will serve to show the chronicity of the disease. In point of fact, the eye is so much exposed to view, that pathological formations such as amyloid tumor upon this organ are usually noticed at an early date even by the laity.

The disease begins unnoticeably: the total absence of inflammatory symptoms must be emphasized. For this reason, no original cause of the disease can generally be ascertained.

The development of the affection is usually slow and gradual. But there are cases in which it is so rapid, that in the course of a few months, or even weeks, the tumor may reach the same size attained in other cases after a growth of many years. Thus, in my third case, the left upper lid measured 54 *mm.* horizontally and 33 *mm.* vertically Dec. 17, 1880; by Jan. 17, 1881, the horizontal measurement had increased to 65 *mm.*, the vertical to 40 *mm.*

Of the 30 cases so far reported, 21 were affected on one side only, 9 on both sides.

The so-called amyloid tumor of the conjunctiva is a disease of the conjunctiva of the eye. This tissue is the only one affected

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in the preliminary stages of the disease. Invasion of the other portions of the lids—and this can happen to any of the tissues of which the eyelid is composed—may occur at a later stage.

The disease consists in a proliferation of the subconjunctival tissue. This process is most frequent and extensive at that portion of the conjunctival fold which lines the orbital edge of the tarsus, the plica semilunaris, and the caruncle. As the disease progresses, it principally affects the scleral conjunctiva. The tarsal conjunctiva is generally but slightly affected; not that it is so infrequently attacked (on the contrary it is often so), but that the proliferative condition is generally of a low grade. Still my third case shows that large tumors are met with in this region; or, as Zwingmann (*l. c.*, p. 175) has so felicitously expressed it: "The tumor almost always delights in spreading out into the looser, more movable, and elastic subconjunctival tissue, avoiding the dense tissue of the tarsus and the tarsal conjunctiva."

The frequency with which the various portions of the conjunctiva were affected in 27 cases (37 eyes) may thus be tabulated: the whole conjunctiva in 13 cases, the conjunctiva fornicis in 1 case, the scleral conjunctiva in 4 cases, the tarsal conjunctiva in 1 case.

The plica and caruncle were never affected alone.

Simultaneously with other portions of the conjunctiva, the conjunctiva fornicis was affected in 32 eyes, the scleral conjunctiva in 18, the tarsal conjunctiva in 30, the plica and caruncle in 20.

In every case but two, the tarsal conjunctiva (especially that portion which covers the orbital edge of the tarsus) and the conjunctiva fornicis were the seat of the disease.

The prevalent locality of amyloid tumors of the conjunctiva is the upper fold, and neighboring portions of the tarsal conjunctiva, as already stated by Zwingmann (*l. c.*, p. 174). *And it is just these portions of the conjunctiva in which the normal subconjunctival tissue bears "the greatest resemblance to typical adenoid tissue."* (Compare Waldeyer, *Graefe-Saemisch*, Bd i, p. 249.)

The proliferation at this region is usually diffuse; it is not sharply defined against the neighboring tissues; it is not circumscribed. Only two cases of circumscribed tumors have been reported: one of the scleral conjunctiva, the other of the tarsal conjunctiva.

The epithelial layer of the conjunctiva is firmly united with the tissue of the tumor. One case only has been reported "of a tumor in the lower conjunctival fold which was covered by normal conjunctiva."

Stroehmberg (*l. c.*, p. 16) has given so good a description of the peculiarities of this variety of tumor, that I quote from it, as follows: "This tumor cannot be identified with any previously known surgical tumors. It might soonest be confounded with trachoma, and yet it differs essentially from the proliferative form of that affection. It does not consist, like trachoma, of various granules, nor of a conglomeration of granules. On the contrary, it is diffuse; and if by chance it looks ragged or granular, the lobes are irregular in shape, and do not bear the least resemblance to a clump of structures all heaped up together, any one of which might be taken as a type of the whole. These roundish lobes seem to originate from folds of the conjunctiva, which in turn owe their origin to the fact that, although the conjunctiva undergoes proliferation not only in thickness but along its surface, it has to be satisfied with the space created for its normal expansion between the eyeball and lids. It is these single lobes which occasionally give a granular appearance to the whole tumor, but this is nothing more than a reproduction *in petto* of the appearance of the tumor in the conjunctival fold. These lobes also are not alone due to proliferation in the subconjunctival tissue, but to an increase in the surface of the conjunctiva, which at the fold, rather than anywhere else, finds a chance to enlarge."

There are four phases in the development of amyloid tumors of the conjunctiva, from their earliest stage to the most advanced form of degeneration.

1. *Simple adenoid proliferation in the subconjunctival tissue.*

2. *Hyaline degeneration.* (Raehlmann: these ARCHIVES, vol. x, page 178.)

3. *Exquisite amyloid degeneration.*

4. *Calcification and ossification.*

The first phase is represented in four cases, in one of which both eyes were affected, in the others only one eye.

The external appearance of the eyes in these four cases is normal, with the exception of a slight increase in the size of the eyelids in that part which adjoins the orbital margin, and moderate ptosis.

The tension of the eyelids in two cases is considerable, so that a certain degree of force is necessary for complete eversion.

Definite inflammatory alterations are absent in all. One has a slight keratitis, another is complicated with luxuriant trachoma in the first stage. But we are to notice that it is only on that portion of the conjunctiva unoccupied by the neoplasm that the luxuriant granulatious rest. The surface of the tumor is absolutely free from granulations.

The distinctive process in these four cases is a proliferation in the subconjunctival tissue, especially in the fold, and secondarily in the orbital margin of the tarsus and the plica. The increase of volume is indicated in three cases by a simple thickening of the parts affected, in the fourth by a more tumor-like character.

The surface of the neoplasm is generally smooth, and covered with a healthy mucous membrane. The occasional folds are due to the conditions of the space in which the neoplasm grows. Stroehmberg's explanation of their origin seems very plausible. When the tumor lies in the submucous tissue of the tarsal conjunctiva, its surface is knobby and sometimes granular. For the neoplasm cannot grow so luxuriantly in the dense tissue of this region as in the coarse-meshed, lax subconjunctival tissue of the folds. Hence only small clumps are formed, and these give rise to the knobby, granular appearance.

If the neoplasm is poorly supplied with vessels, it is generally of a bright yellow, glassy color, and of a coarse but very elastic consisteney; but if highly vascular, its color varies from an indescribably diaphanous reddish-yellow to a reddish-brown, with a delicate elastic consistency.

During the first phase of the development of amyloid tumor the patients complain simply of heaviness of the lids, increased sensibility of the eye to various influences, slight congestion of the eyes, and exceedingly disagreeable sensations after exposure to dust, heat, bright light, cold air, etc.

The anatomo-pathological character of this first phase consists in a proliferation of pure adenoid tissue in the submucous layer of the conjunctiva, or, in other words, hypertrophy of the normal adenoid tissue of this region. In these four cases, however, the tissue is no longer unaltered. The so-called hyaline degeneration has already begun.

In the subsequent phases, the proliferation assumes greater dimensions; the tumor is occasionally described as being as large as an almond.

The larger the tumor, the more remarkable and characteristic the external appearance of the eyes affected. In general we distinguish two types according as the growth originates in the scleral conjunctiva, plica, and caruncle, or in the conjunctival fold and upper margin of the tarsus.

If the scleral conjunctiva is chiefly or solely affected, the tumor encircles the cornea like a ring, more or less complete, more or less high. In the centre of this ring lies the cornea. If the tumor is small, the cornea is entirely uncovered; if large, its lobes fall over the cornea and conceal it more or less; occasionally the cornea cannot even be seen.

The lids are pushed away more or less from the eyeball, depending upon the greater or less thickness of the tumor. If the scleral conjunctiva in the region of the fissure of the lids is greatly thickened, it is difficult and sometimes impossible for the patient to close his eyes.

Large tumors, situated at the conjunctival fold, and the adjoining tarsal conjunctiva cause a characteristic protuberance of the corresponding lid. It sometimes bulges forward like a bag. When the tumor is large, the whole lid may be bulged forward, but more extensively over the region of the conjunctival fold. From here the curvature either decreases gradually—as is the case when the tarsal conjunctiva has degenerated into larger tumors—or steeply, when the tarsal conjunctiva is but slightly affected, to the edge of the lid.

In the former case, the position of the edge of the lid is scarcely changed, it merely falls away slightly from the eyeball; in the latter, the lid is more or less inverted, or even in a state of entropion.

When the tumor is circumscribed, the lid is prominent only over the seat of the tumor.

If both lids are equally affected, the eye looks like a hemisphere with a narrow horizontal slit.

If the upper lid alone is affected, and if the tarsal conjunctiva has also undergone proliferation, the lid is enlarged from above downward, falls down, and even projects over the lower lid.

The skin of the lids is generally intact, easily movable, and can be pinched up into folds. Enlarged veins are frequently visible upon the upper lid, which is occasionally of a brownish color over a small extent of surface. The skin of the lids is very rarely œdematous, even to a slight amount.

The edges of the lid are sometimes reddened and excoriated near the external commissure by the serous secretion, which flows scantily from the affected eye and dries into crusts.

The skin of the eyelids was never found connected with the neoplasm. But in one or two cases the skin at the angle of the eyelid was thus slightly united.

On palpation of the eyelids we can feel knobby masses, with a smooth, or, perhaps, uneven surface, sometimes hard, like cartilage, sometimes quite yielding. These masses cannot be moved from the tarsus, but they can be from the orbital margin. It is oftentimes difficult to evert the lids on account of their enormous tension, unless we use a great deal of force, and even then it is sometimes impossible, unless we slit the external commissure freely. It is generally easy to evert the lower lid, and occasionally, though rarely, the lid is everted by the tumor itself.

After slitting the commissure, which is indispensable for a perfect operation, the tumor generally slips out from the conjunctival fold. It is rarely a *single* solid growth, but generally a convolution of irregular tumors running parallel

to the edge of the lid, with their base in the fold, or tarsal or scleral conjunctiva. The lobes sometimes extend to the degenerated plica or caruncle.

When the whole conjunctiva is affected by the disease, the tumor fills the entire space bounded by the eyelids in front and the eyeball behind; and jutting forward from between the eyelids it presents a picture which is totally unlike that of any other affection of the conjunctiva, a picture indescribable and unique.

And here we must remark that eyes thus solely affected are never inflamed. Inflammatory symptoms are noticed only when the cornea becomes secondarily affected.

These symptoms are equally characteristic of the other three phases of amyloid tumors. The variations in the separate phases shall next be considered.

The *second* phase (hyaline degeneration) is characterized by the *smooth and glistening surface of the tumor.* (Exceptionally, however, the tumor projects beyond the lids, in which case the mucous membrane becomes dry and rough.) *When slightly vascular, the tumor is generally brownish-yellow and wax-like; with numerous vessels, unmistakably diaphanous. The surface of the tumor is sometimes marked by a few coarse blood-vessels. The greater the vascularity of the tumor the less its consistence; this is, however, always elastic. The tumor is never soft in this stage.*

Tumors in this phase are harder than those in the first phase, and more elastic than those in the third.

The pathologico-anatomical condition in this phase is characterized by advancing proliferation of adenoid tissue and hyaline degeneration (Raehlmann, *l. c.*, and Case 28; microscopic condition).

The *third* phase is characterized by a few but important symptoms. The color of the tumor remains about the same, except in case of excessive vascularization, when it becomes a dirty brownish-red. The tumor generally looks diaphanous and glassy. *It varies in consistency from hard to gelatinous, depending on the degree of vascularization. But even in the latter condition, the tissue is not elastic; if comparatively hard it is inelastic and brittle; if soft, inelastic, but impressible.*

The tissues are generally so fragile that in attempting to remove the tumor by seizing it with the forceps, or even in eversion of the lids, it rips and tears into shreds in every direction, and shows smooth edges and glazed surfaces, with here and there a drop of dark blood. Occasionally some pieces break off if we manipulate the tumor too freely.

The tissues sometimes pit upon pressure with the finger.

This phase is occasionally characterized by spontaneous hemorrhage, which owes its origin to the fragility of the vascular walls.

The chief pathologico-anatomical condition is the exquisite amyloid degeneration, which has been so carefully described by Raehlmann (*l. c.*).

The *fourth* phase is characterized by calcification and ossification, in addition to pronounced amyloid degeneration as in the previous phase. In two cases, we read that a mass of chalk, in one, that a bit of bone was found imbedded in the interior of the tumor. Hippel (*l. c.*, page 16) thus describes a case of his own: "Several sections of the mucous membrane of both the upper and the lower lid contained, partly near the surface and partly in the deeper layers of the conjunctiva, some small hard, round, and irregular bodies, which, even to the naked eye, were quite distinctly set off by their bright color from the surrounding wine-colored tissue. The microscope showed that they were composed partly of chalk and partly of genuine bone with beautifully developed osseous corpuscles and Haversian canals."

When the calcified or ossified portions lie deep in the tumor, they naturally escape simple inspection or even palpation, as happened in one case, when the metamorphosed districts were not discovered until the microscope was employed. But when they lie directly beneath the conjunctiva, their presence is readily revealed by their appearance and hardness.

We have not yet sufficient material at hand to define the precise manner in which these four different phases are developed. Still it is quite plain that no particular time is needed for the development of each especial phase. Thus,

the development of the third phase is evidently independent of the age of the tumor, for in one case amyloid degeneration was noticed when the tumor was a year and a half old, and in another case when the tumor was only five weeks old. On the contrary, in one case in which the tumors had existed on both eyes for at least twelve years, the left eye showed only the faintest traces of amyloid degeneration, while in the right eye it was well marked although circumscribed.

There is one symptom which has not yet been mentioned —proliferation of the tarsus, as apparently demonstrated by its enlarged dimensions in all directions. This condition seems so evident and undeniable from mere external appearances, that Adamük speaks as a matter of course of "amyloid degeneration of the conjunctiva and of the tarsus."

But an anatomical examination of those cases in which the tarsus seemed to be excessively thickened *showed that the tarsus was either entirely intact, "or only secondarily and even then but slightly affected with amyloid degeneration, never independently proliferated.*" Still the deception is so perfect that it is quite impossible in this way to decide whether the tarsus is affected or not, because we cannot by the touch distinguish the tarsal cartilage from the proliferations in the submucous tissue of the conjunctival fold and tarsal conjunctiva.

Amyloid tumors in the second and following phases cause various disturbances on the part of the eye in addition to those already mentioned under the first phase. These are chiefly of a mechanical nature, and, in a word, are due to the pressure which an extensive tumor in this region must of course exercise upon all the neighboring structures.

Amongst these disturbances we include:

1. The deformity already described.

2. The interference with the mobility of the lids. Sometimes the upper lid cannot even be raised. Ptosis of various degrees is often met with, as well as total blepharoptosis.

3. It is probable that the eyeball itself cannot easily be rotated, although no such disturbance has yet been reported.

4. Secondary affections of the cornea (10 times in 30 cases):

Pannus in 6 cases, always accompanied with trachoma ; loss of substance in 4 cases.

These latter facts would seem to indicate that the tumor does not generally exercise an injurious effect upon the cornea, probably owing to the fact that it is only the smooth mucous membrane of the tumor which ever comes into contact with this tissue.

5. When the tumor embraces the locality of the puncta lachrymalia, the latter are more or less everted. I have never seen or heard of any interference on the part of these tumors with the lachrymal secretions.

6. Diminution of vision may arise from the blepharoptosis, or from the tumor covering the cornea, or from the secondary affections of the cornea.

We now reach the important question of the relation of amyloid tumor of the conjunctiva to trachoma,—a question upon which authors are greatly divided.

Oettingen (*l. c.*, p. 56) thinks that trachoma is the starting-point of the disease, and that amyloid degeneration is one of the forms of retrogressive metamorphosis of trachoma. As we sometimes see fatty degeneration of trachoma, why should we not, under certain circumstances, meet with an amyloid degeneration? The so-called "gelatinous degeneration" of trachoma may be nothing but the preliminary stage of amyloid degeneration. "Here," says he, "it would be easiest to prove how the follicles coalesce into swollen masses, and gradually condense into those brittle and fragile flakes which are peculiar to amyloid degeneration."

Saemisch, Leber, Becker, Mooren, and Stroehmberg consider that the disease is entirely different from trachoma. Narkiewicz-Jodko thinks that the tumor is by no means exclusively observed on granular and degenerated conjunctivæ. He acknowledges, however, that it is frequently observed under such conditions.

In his second publication (*l. c.*, p. 316) Leber expresses the view that "the amyloid degeneration of the skin of the eyelids is simply a local disease, and in many cases a sequel of trachoma." After defining the variations between trachoma and the disease in question, he agrees with Mooren that the latter is *sui generis* and entirely different from trachoma.

Hippel (*l. c.*, p. 22) cannot decide whether there is any direct connection between granular conjunctivitis and amyloid degeneration of the conjunctiva. He thinks that his own case, however, represents a more advanced though rare stage of trachomatous development.

Zwingmann (*l. c.*, p. 155), who was the first to employ the expression "amyloid tumor" for the "amyloid degeneration of the conjunctiva" of the older authors, thinks that it is always due to the degeneration of a more or less circumscribed or diffuse granuloma, and that these granulomata in a majority of cases are simply trachomatous proliferations probably arising from incipient amyloid degeneration of the original trachoma.

Adamük (*l. c.*, p. 8) cannot decide what relations exist between these two "processes."

Raehlmann (*l. c.*, p. 188) is of the opinion that these amyloid tumors are specific neoplasms, independent of trachoma in their origin and course, and that they may attain very large dimensions, and undergo extensive or total hyaline degeneration without revealing a trace of amyloid degeneration.

Of 30 cases of amyloid tumor, 14 were entirely free from trachoma, while in 16, trachoma or allied affections were undoubtedly present. In other words, almost one half of the cases showed no signs of trachomatous alterations.

This fact, in conjunction with the characteristic picture of this disease in all its phases, proves that amyloid tumor of the conjunctiva is a disease sui generis, *originating from hitherto unknown causes in a previously healthy conjunctiva, and having nothing in common with trachoma.*

Leber's plausible idea (*l. c.*) that the uncomplicated cases may possible be "especial forms of trachoma," or "a degenerated trachoma from the beginning," seems unsupported by clinical testimony.

Amongst the 16 cases associated with trachomatous alterations in the conjunctiva, we find 1 of numerous lymph follicles, 2 of a few granulations, 8 of luxuriant granulations, 1 of extremely diffuse trachoma, 2 of trachoma in the shrivelled stage, 2 of trachoma in the cicatricial stage.

In all of these cases but one, the trachomatous alterations occupied a portion of the conjunctiva entirely unaffected by amyloid growths, and in no case was granular degeneration visible upon the mucous membrane of the amyloid tumor.

Leber and Zwingmann (*l. c.*) have asserted that amyloid tumor of the conjunctiva is in many cases the direct result of trachoma in an advanced stage of development. But no one has ever observed such a transformation. The only parallel case is the simultaneous appearance of both processes on one and the same conjunctiva,—which really proves nothing. Moreover, only one case of this sort has ever been observed. In most cases, the trachoma was of the common type. In two cases, the diagnosis of trachoma simplex might even have been flatly denied. We have no right to call a conjunctiva trachomatous, when its surface is simply strewn over with a few structures resembling granulations!

All of these observations, therefore, go to prove that the juxtaposition of the two processes is simply accidental,—a probability which is rendered almost certain by the frequent appearance and development of amyloid tumor of the conjunctiva independent of trachoma.

When the tumor is large, well developed, and in its latter phases, the diagnosis is made without difficulty. All mistakes can be easily avoided when we remember that the disease has a specific character differing from all other affections of the conjunctiva.

But the incipient stage is difficult to diagnosticate. Mistakes will be most frequent in the case of diffuse trachoma, especially when the latter is complicated with "thick duplicatures in the hypertrophic conjunctival fold," of which Ammon and Stellwag (Lehrbuch, 4te Aufl., page 453), have spoken. I am quite unable to lay down the differential points for the diagnosis of amyloid tumors, because it seems quite probable that many cases of apparent diffuse trachoma simply represent the preliminary or even advanced stages of the tumor eventually combined with trachoma. In order to differentiate these two conditions, we should remember that, on the one hand, in diffuse trachoma granula-

tions predominate, and further, that we should probably meet with inflammatory symptoms as well as pannous keratitis. On the other hand, the absence of pronounced granulations, as well as inflammatory symptoms and pannous keratitis, would suggest the presence of incipient amyloid tumor.

The most difficult cases to diagnosticate will be those in which a tumor of small dimensions is associated with luxuriant trachoma. Under such circumstances, as well as in all other doubtful cases, we shall have to resort to a microscopic examination.

The villous, cauliflower-like proliferations of the mucous membrane, which are occasionally noticed in cases of chronic blennorrhœa of the conjunctiva, will hardly give rise to errors in diagnosis. They differ too much in their structure and in the nature of their surfaces from the amyloid tumor, covered as the latter is with a smooth and glistening mucous membrane. Beyond this, the nature of the disease in cases of blennorrhœa, the inflammatory symptoms, and the typical secretion will verify the diagnosis.

Other conjunctival tumors can be differentiated from amyloid tumors by the following diagnostic points:

Polypi, according to Saemisch, are delicate, pale-red structures shaped like a pear, and provided with a thin pedicle.

Lipomata are usually situated between the external and superior recti muscles. They are soft, pure yellow, and seem composed of several lobes.

Epitheliomata are almost invariably secondary growths. Exceptional cases are extremely rare.

Sarcomata usually arise from the sclero-corneal margin; rarely from the conjunctiva itself. They are generally pedicled, very vascular, and pigmented.

The cases of amyloid tumor of the conjunctiva, so far collated, are too few for us to set up any rules for establishing the prognosis of the disease. On the whole, however, we cannot embrace Zwingmann's unfavorable opinion, especially as regards relapses. Even when the tumor has attained an extensive growth, it is accessible to therapeutical and still

more so to operative measures, and should a radical removal, which Zwingmann regards as indispensable, be impossible, the prognosis is not quite unfavorable. For, in many such cases, the disturbances and annoyances caused by the tumor have been greatly relieved and sometimes completely removed.

The eyeball itself is only rarely, and even then but slightly, affected, so that no especial danger need be feared from that quarter.

No cases have yet been reported in which the tumor has been allowed to grow as it pleased. We cannot, therefore, tell what would be the ultimate result under such circumstances.

Various caustics as well as the knife or scissors have been resorted to in cases of amyloid tumor of the conjunctiva. The copper crayon was used in two cases with moderately successful results; a solution of copper in a third case, and of silver nitrate in a fourth. It would seem hopeless to attempt to remove large tumors in this manner. Perhaps it might prove successful in the incipient stages.

We may here suggest that no one has yet tried to diminish the size of the tumor by parenchymatous injections of tinct. iodinii or tinct. Fowlerii.

Twenty-five of the 30 cases were operated upon. The growth was radically removed in 9 cases, in most of which the tumor was small and more or less circumscribed. A radical removal of larger growths was also attempted in 4 cases. Partial excision was attempted in 15 cases; one case was operated upon at several sessions.

In performing the operation, the tumor, if small, should be exposed as freely as possible by everting the lids; if large, the external canthus must be divided. The excision is to be performed with the scalpel or scissors, whichever appears to be the more suitable in any given case. The sharp spoon has occasionally proved available in removing gelatinous tissue which escaped the bite of the forceps. In 4 cases the operation was performed through the lid; twice in order to give the lid a more suitable form by removing a piece of skin. The hemorrhage was generally

considerable, especially when the amyloid degeneration was well marked. But it was easily stopped. In 2 cases Paquelin's thermo-cautery was used for this purpose.

The after-treatment consisted in the application of a more or less firm bandage, usually with antiseptic materials. The conjunctival sac was cleansed with disinfecting solutions of carbolic or boracic acid.

The recovery was generally brief; in a few days with but slight reaction. It was quite remarkable to notice the regenerative capacity of the conjunctiva. Large losses of substance, which would be of the most grievous consequences to the healthy eye, were rapidly made up in these cases, and the resulting cicatrices rarely showed how extensive the defects had been.

Erysipelas and abscess of the lids were noticed in 2 or 3 cases.

Ulceration of the cornea was also observed in 5 cases, after operative removal of the tumor.

In 9 cases of more or less radical extirpation, the result was satisfactory, so far as concerned the removal of the tumor and the disturbances which it caused. Subsequent operations for ptosis, entropium, etc., had to be performed in several cases to restore the eyelids to a normal position. Two relapses were noticed in one case, necessitating repetitions of the operation.

In one case the tumor was successfully removed, but a total ankylo-symblepharon rendered the eye useless.

In 7 of the 15 cases in which the tumor was partially excised, the remaining portions underwent retrogressive metamorphosis in a shorter or longer time after the operation, and after complete cicatrization of the portion which had been excised. The cause of this process has not yet been discovered. The disappearance of the remaining portions was, however, very gradual.

In two cases, on the contrary, the tumor sprouted so rapidly after partial excision, that Zwingmann (*l. c.*, page 176) thought that the operation itself must have been at fault. He therefore advises us to remove at an early stage and in the most thorough manner every particle of tissue which seems morbid to the touch.

It is impossible at present to explain why relapses occur when the amyloid growths have already undergone retrogressive metamorphosis after partial extirpation. It seems to me that the further the tumor has advanced into the third phase of development, and the more exquisite the amyloid degeneration, so much the more frequently are we to expect relapses after partial extirpation.

The treatment of amyloid tumors of the conjunctiva should be as follows:

1. Radical extirpation in all those cases in which it can be accomplished without especial difficulties, *i. e.*, in which the tumors are small, more or less circumscribed, and in which the operation can be performed without too extensive a loss of substance.

2. Partial extirpation in all other cases, in the hope of exciting spontaneous retrogressive metamorphosis. If this process does not set in, if relapses occur, *partial extirpation at several subsequent sessions is to be attempted* (Mandelstamm), in order to prevent symblepharon or ankyloblepharon.

If the position of the lids remains anomalous, suitable operations may be undertaken at a later date.

The chief point in the after-treatment is to cleanse the conjunctival sac frequently and thoroughly with disinfectants, especially a 2 % solution of boracic acid, which is well borne and *does not irritate*. We have used this solution for the last two years, with most excellent results after such operations.

There is no need of a subsequent compressive bandage, as it may hinder the escape of secretions from the conjunctival sac. A light occlusive bandage, with antiseptics, is quite sufficient.

Corneal complications are of course to be treated according to special indications.

CONTRIBUTIONS TO THE PATHOLOGY OF SYMPATHETIC EYE DISEASE.

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(With a plate, Tab. viii.—from Vol. X., German edition.)

Translated by William C. Ayres, M.D., N. Y.

UNDER the auspices of Dr. C. Friedländer, demonstrator at the City Hospital, I have made the following microscopic examination of a severe case of sympathetic iridocyclitis. The case was presented to the Berlin Medical Association by Prof. Hirschberg, with the following remarks:

Emilie S., 21 years old, a servant girl, came to the clinic on August 19, 1880. She was perfectly healthy; had received an injury to her left eye nine weeks before. She was cut in the eye by a large piece of a broken lamp chimney; the whole cornea was split from above downward; above, the cut extended into the sclera. The iris was prolapsed throughout the whole extent of the wound. The aqueous, lens, and a part of the vitreous were evacuated, and the eyeball collapsed. In the hospital she was treated with compressive bandages. There was a prolapse of iris in the upper angle of the wound, which was removed a few days after. Healing took place without any irritation, and the eye retained perception of light. After three weeks she was discharged, and unfortunately went back to her position as a servant girl.

Eight days later the right eye began to be inflamed. On July 15, or thirty-two days after the injury, sympathetic iritis was diagnosticated in the right eye. The patient was put in a dark room; atropine and mercurial inunctions were ordered.

Unfortunately she was sent home to her family, but returned on August 10th with a relapse, exhibiting a punctated opacity of the posterior part of the cornea, and numerous posterior synechiæ; almost complete blindness (fingers hardly counted). At this stage her physician proposed enucleation of the injured eye, but she did not consent, and came to Berlin.

St. pr., August 19th.—There is a cicatrix throughout the breadth of the cornea of the left eye, extending into the ciliary region of the sclera. Iris united to the scar. No anterior chamber. The pupil is very narrow, with a gray connective-tissue mass closing it. Slight pericorneal injection, especially above, in the form of a triangle. Several large scleral vessels extending to the scar, both above and below. S = 0; − T½. Pain on pressure in the ciliary region upward and inward, but not excessive. The patient is somewhat indolent.

In the right eye circumcorneal injection. Cornea covered with small punctate opacities. In spite of atropine the pupil is not dilated; pupillary margin adherent to lens capsule and irregular. The tissue of the iris elevated in numerous places. Pupil can not be illuminated. Fingers barely distinguished at 1′ eccentrically. − T½–1.

On August 20, 1880, the wounded eye was removed under narcosis. She was placed in a dark room, atropine was instilled, and inunctions were energetically employed. August 21st the circumcorneal injection was somewhat diminished, and the pupil slightly illuminable. Said she saw better, but an examination was not made. September 13th: fingers 6′; with +6D Sn 7½; field moderately clear. Colored squares of 2 *cm.* were not distinguished at 12″. The inflammation had subsided; iris in proper position; pupil illuminated slightly, so that cyclitic flakes could be distinguished in the anterior portions of the vitreous. She now lost patience and went home, but returned on October 21st much worse. She then had slight circumcorneal injection; cornea clear, iris green, pupil not dilated to medium size, with a gray band of connective tissue in it; slight illumination. Fingers at 6″. F much narrower:—above, inward, and below 30°, outward 50°. Dark room, instillation of atropine, and thorough inunctions. December 2d, counted fingers badly at 1½′; with +6D read not quite Sn 16. F slightly contracted. She was treated for six weeks and discharged December 2d, but told to stay in a dark room at home and to take iodide of potassium.

February 15, 1881, she returned in a much better condition, which had continued through four weeks previous. Eye free from irritation. Tension almost normal, pupil 3-4 *mm.* large, but slightly irregular. Iris attached to capsule by delicate bands of tissue. Surface of iris free, and of its natural color. Cornea, lens, and vitreous clear, with but few flakes in the last, which were situated near the papilla, partially covering it. In the periphery there were numerous white plaques round and well defined. Counted fingers at 6′; with + 6D read Sn 16. Field and color field normal for blue and red. Green called white.

May 11, 1881, she returned. Counted fingers at 8′, recognized Sn 10 at 5″. With + 6D, Sn 7½.

The field was normal for white, blue, and red, but green was mistaken for gray. As long as she was out of the clinic, she took about 0.50 of iodide of potas. three times daily without any unpleasant symptoms.

May 11, the eye free from irritation, iris in position, pupillary margin attached to the capsule by a gray circular band of connective tissue. Pupil 4 *mm.* broad, 5 *mm.* high. Normal red reflex with the ophthalmoscope, and but few floating opacities in the vitreous. Papilla easily recognizable, but toward the temple was an opacity about the size of the papilla covering it partially. A smaller similar opacity covers the macula lutea. In the periphery are numerous little patches, mostly smaller than $\frac{1}{10}$ P.

Anatomical Examination.—The eye was placed in Müller's fluid for 2½ months, and then cut open in its horizontal diameter. It measured 23 *mm.* in length and 25 *mm.* on the diagonal (see fig. 1, table viii). The broad scar pulled the middle of the cornea inward. The lens was absent. The vitreous, a portion of which had been lost, was shrunken to a flat mass, situated just behind the iris. The vitreous chamber was filled with a yellowish fluid mass. The whole *uveal tract* showed evident signs of inflammation. The *choroid was everywhere very thick, in many places thicker than the sclera.* The thickest part—2 *mm.*—was in the vicinity of the papilla. The thickened iris was applied to the cornea, and the ciliary body drawn in almost to the axis of the eye. As I detached the choroid from the sclera on both sides in order to find the ciliary nerves, there were places of adhesions between these two coats. The retina was folded.

This was caused by a fluid exudation which separated the retina and choroid at different places. The optic nerve, its sheaths, and the sclerotic looked healthy.

Microscopic Examination.—The sclera was normal, except in its inner layers where there was a slight infiltration. Conjunctiva somewhat more vascular than usual. The cornea was changed only in the region of the scar (fig. 2, table viii). Here the fibres were bent from their course, and slightly wavy, most pronounced in the posterior lamellæ. In the anterior the fibres were almost normal. The line of demarcation between the corneal tissue and the new-formed scar was well defined. In the vicinity of the scar, the corneal tissue showed a prolifieration of nuclei and slight vascularization. The membrane of Descemet was detached, and the space between it and the cornea filled with new-formed tissue. At the cut end this membrane was rolled over on itself. The membrane of Bowman was tense, and near the corneal scar was somewhat raised, as was also the corneal tissue. The anterior epithelium covered the scar, but was not regular, the cylindrical layer being wanting.

The corneal scar showed different conditions in the different sections. In those which were made near the middle of the cornea, it united the ends of the divided corneal fibres in the anterior half. In the posterior half there was only a small border of this tissue along the corneal fibres. This border enclosed a prolongation from the iris, which on its posterior end was attached to the capsule. The further the sections passed from the middle of the cornea, the smaller the mass of connective tissue which united the ends of the corneal fibres, and the larger the portion of enclosed iris tissue. In the same manner the lens capsule gradually disappeared from the wound below, and where it was no longer to be found, the defect in the cornea was closed only by iris tissue. Small epithelial tracts sank into the scar tissue from the corneal epithelium. In this place I will mention a small space in the ciliary region, which appeared only in a few sections and was filled by an epithelial new formation (9, fig. 2, tab. viii). It measured 0.1 *mm.* in diameter, and was lined by tall cylindrical cells. This formation suggests the

genesis of cysts of the iris. In this case it has evidently been formed by cells which had been carried into the eye by the injury; the proliferated cells produced a kind of cyst.

The new-formed connective tissue of the scar contains numerous nuclei and blood-vessels. The fibres, which were already distinctly to be seen, stood perpendicular to the direction of the lamellæ of the cornea in the middle, but anteriorly and posteriorly they bent around so as to run parallel with these lamellæ.

On the posterior surface of the cornea there was a mass the shape of a plano-convex lens, in which the tissue of the iris and ciliary body was embedded (7, fig. 2, tab. viii). It was attached to the cornea by the scar tissue, so that during life there could not have been the smallest space of anterior chamber. All the bends and folds of the posterior surface of the cornea closely corresponded to those of the surface of the iris. The lens capsule was embedded in the midst of the tumor containing the iris and ciliary body (8, fig. 2, tab. viii); numerous round cells were between the folds of the capsule. The capsular tissue was well preserved, and also here and there remains of the lens tissue were to be seen.

The uveal tract showed the most numerous and interesting changes. As already observed, the iris could not be distinguished from the ciliary body, both having been fused into one mass; I will call this mass the anterior part of the uveal tract. Those preparations which were obtained from near the long diameter of the eye cut the lens capsule almost into two equal parts; it was attached to the cornea in front, and from thence passed backward, bending toward the side. The lens capsule did not form the boundary of the vitreous, but left this office to a band of connective tissue extending from the ciliary processes (9, fig. 2, tab. viii). This last tissue was distinctly fibrous and contained numerous nuclei. The thickened ciliary processes were still to be distinguished by a contour formed from their pigment. The pigment had collected into masses which could be seen with the naked eye, and with the loupe we could distinguish numerous small irregular nests of pigment infiltration.

With higher powers it was shown that the pigment was sometimes contained in cells, sometimes was free in the tissue. In places where we could see no pigment with small powers, with high ones the whole tissue was studded with the finest pigment granules. The tissue was composed, for the most part, of round cells; in the most pigmented places only such cells were to be seen. In other places where there was not so much pigment, the tissue was striated, and here we could find spindle-shaped cells lying close to one another in bundles. These bundles were infiltrated with round cells, which separated them from one another.

The ciliary body was tolerably normal. Its muscle fibres were apparently well preserved. They were packed together in groups by a round-cell infiltration.

In sections nearer the corneal margin, this connective-tissue boundary of the vitreous was not found. In this locality the medial and lateral parts of the ciliary body were separated; the pigment, which allowed us to follow the windings of the ciliary processes, passed continually from one side to the other.

In the thick choroid no dividing line could be seen between the two outer layers. The pigment layer was everywhere easily distinguished; in many places it was separated from the lamina elastica by a thin layer of amorphous exudation. Where the lam. elast. was easily to be seen, it was uneven and slightly wavy.

Sections of the choroid colored with hæmatoxyline or carmine, when examined with a hand-glass, had a peculiar dappled appearance (fig. 3, tab. viii). As a general rule, the whole choroid was colored, but sometimes we found small round places or long figures which were but little tinted. With high powers (see fig. 5) the deep-colored parts were composed only of round cells, whose nuclei had imbibed much of the coloring material. In the lighter parts there was a peculiar kind of cells, which could easily be distinguished from the round cells in that their nuclei were oblong and puffy, besides containing nucleoli. The nucleoli were all colored very deep, while the nuclei were not so much so in

the same length of time in which the nuclei of the round cells were colored to a dark shade. The protoplasm was colored very dark with eosine. The cells looked like *epithelial cells;* had sometimes only one nucleus, but most frequently two. They were further to be distinguished from the round cells in that they contained a larger quantity of granular protoplasm. The epithelial cells were from 2–4 times as large as the pus corpuscles, whose diameter was 0.006 to 0.008 *mm.* Some of these peculiar cells were much larger than those which we have described, and contained nuclei, varying in number until they formed true giant cells. Some of these latter were 0.020–0.057 *mm.* in diameter, the number of nuclei reaching as high as 28. The nuclei were, for the most part, situated at the periphery of the protoplasm. There was never any grouping of the round cells into a definite relation with the giant cells, as we find in true tubercles. The giant cells and also the epitheloid cells were sometimes isolated, sometimes several together, and often so close to each other that there was but little intercellular substance between them. The giant cells were not found to be more numerous in any particular layer of the choroid, as in the recent Manfredi case.[1]

Both these kinds of cells were present in the tissue of the ciliary body and iris. In these last tissues they were often pigmented, whereas they were but seldom so in the choroid.

The *ciliary nerves* (fig. 4, *a* and *b*) were made the object of a special examination. They were isolated on the outer side of the choroid as far as possible with the naked eye and by the aid of magnifying glasses, and examined in longitudinal and cross sections as well as in teased preparations. The sections were made by using a minimum of glycerine paste and cutting them between pieces of amyloid liver. The axis cylinders were colored by letting the sections remain for a few minutes in chloride of palladium and carmine, or in carmine alone. In the latter case they remained in the solution 4–5 days. The nuclei were colored with hematoxyline or gentiana violet. For com-

[1] *Archives d' Ophth.*, Nov.–Dec., 1880, p. 44.

parison I prepared normal nerves under the same conditions.

In the longitudinal sections and teased preparations we could see with small powers that there were round cells within the nerve bundle. The number of these round cells varied in different localities, but were never very numerous. That they were really in the tissue of the nerve, and not merely appeared so, was shown from the fact that they were found in longitudinal sections which came from near the centre of the nerve. In cross sections these round cells were difficult to distinguish from the cross sections of the nerve nuclei, but nevertheless we could distinguish that there was a much larger number of round bodies between the nerve cells than in sections of normal nerves. All the nerves were not affected alike by this interstitial process; it varied also in different places of the same nerve. Two ciliary nerves showed such accumulations of round cells in a very slight degree. For short distances they were entirely wanting. The axis cylinders were always preserved, and in preparations colored with carmine were easily to be seen, both in longitudinal and cross sections. The medullary sheath was also perfectly well preserved in most places.

In all sections of the *retina* the different layers were distinct (fig. 3). The pigment layer was sometimes detached from the choroid by a thin layer of exudation. In one place I found an irregularity in this layer which seemed to have been caused by a proliferation of the pigment cells. In isolated places the epithelium was separated from the rods and cones by an amorphous exudation, causing small detachments.

Müller's fibres were proliferous in places, and extended beyond the anterior surface of the retina.

The *optic nerve* was normal except a slight round-cell infiltration of its interstitial connective tissue in the region of the lamina cribrosa (13, fig. 3). The sheaths were also normal.

The *vitreous* was pathological in that it was infiltrated with round cells in its anterior part, where it came in contact with the ciliary body.

The most interesting peculiarity of the above examination was the enormous thickening of the choroid, which has been equalled in only one case that I know of—that of H. Pagenstecher. I have found the following similar cases: Adolf Alt[1] describes five cases which he had observed, in which the choroid was very thick, in one case four times the normal. The ciliary nerves were normal. He further quotes a similar case from Donders and Pagenstecher. H. Pagenstecher has published a case in these ARCHIVES (vol. viii, p. 65) in which the choroid was much thickened. In the text we find it put down at 0.2–1.2 *cm.* His figure, however, does not agree with the text. The section of the globe was drawn double the natural dimensions, and the thickness of the choroid reaches only 6 *mm.* in its thickest part; it can therefore have been only 2.5 *mm.* He could not find the ciliary nerves in his case.

B. Steinheim[2] reports two cases in which the choroid was 0.45 and 0.75 *mm.* thick. The ciliary nerves were normal. A third case by the same author (anatomical examination by Prof. Sattler) showed a purulent infiltration of the retina and choroid, but these membranes were not particularly thick; the ciliary nerves were surrounded by round cells.

In almost all of these cases the thickening of the choroid was caused by round-cell infiltration; in the case of H. Pagenstecher alone the tissue was principally fibrous connective tissue, arranged like a network, in the meshes of which round, spindle-shaped, and stellate cells were found. The meshes were covered with a distinct endothelium. In this case the eye had been removed after 6 weeks, and notwithstanding this short time, the development of the tissue had gone so far, while in our case, in which the eye remained in for 9 weeks, the choroid was thickened only by granulation tissue. Our case has another peculiarity, viz.: that we find giant cells and epitheloid cells mixed in the granulation tissue in great quantities. In the paper already referred to, Manfredi describes a case in which there was a production

[1] "On the anatomical causes and the nature of sympathetic ophth." These ARCHIVES, vol. v, p. 395.

[2] "Zur Casuistic der symp. Ophth." These ARCHIVES, vol. ix, p. 43. (Germ. edition.)

of true tubercles in the choroid and ciliary body. Heredity was not entirely wanting (a brother having died of phthisis of the lungs), and the patient had chronic glaucoma for which he had had an iridectomy. After a few months he had sympathy and the first eye was enucleated. The choroid was 1 *mm.* thick in the region of the papilla, and miliary tubercles were seen all over the choroid. They had the structure of true tubercles (granulation tissue, in the centre of which were giant cells) and were partially caseous. The ciliary portion of the retina was also thickened by round-cell infiltration, with giant and epitheloid cells between the round ones.

In the same paper Manfredi described a case of irido-choroiditis in which iridectomy had been made on account of secondary glaucoma, after which sympathy manifested itself. In this he found the same elements as above described, and in the same localities, but no trace of tubercles. Unfortunately he does not state the length of the disease. This case corresponds to ours. The characteristic elements of tubercles were present, but they were not arranged accordingly. Our case is also analogous to what E. Ziegler[1] has produced by experiment, notwithstanding the fact that our patient was a strong, healthy country girl in whom no hereditary tendency could be made out.

The changes which we have noted in regard to the ciliary nerve, were due to an *interstitial neuritis*, characterized by accumulations of small round cells within the tissues. The changes are of a slight degree, for nowhere had they destroyed the nerve, since they could be easily followed in their course.

We can therefore conclude that the power of conduction remained in the ciliary nerve, and that the sympathetic process was carried by their agency to the other eye. This seems to be the more probable, since the optic nerve as well as its sheaths have been found normal.

Besides the cases already cited, we find the following in the literature of the subject concerning changes in the ciliary nerves in sympathetic inflammation.

[1] "Experimental examinations on the origin of tubercular elements." Wurzburg, 1875.

First of all the important case of Goldzieher,[1] in which the nerves were thickly infiltrated with round cells. The nerve fibres were normal, but between them round cells and nuclei were found everywhere. This corresponds precisely to our case. Goldzieher further remarks that the round cells were grouped patches within the nerves, by which the nerve fibres had been compressed. I have not been able to find this condition in our case. Iwanoff[2] states in one case "the membrane of Schwann was thickened, and there were swellings produced by accumulations of nuclei," and in a second case there was only a thickening of Schwann's membrane.

Alt also cites a case (*l. c.*, p. 288) observed in the clinic at Utrecht[3] in which there was fatty degeneration of the ciliary nerves.[4]

Finally I would like to express my thanks to Prof. Hirschberg and to Dr. Friedländer for their kind assistance during the above examination.

Explanation of the Figures.

Fig. 1.—Horizontal section through the left eye. Natural size. 1. Cornea. 2. Scar in the region of perforation. 3. Sclera. 4,4. Thickened choroid. 5. Retina. 6. Shrunken vitreous. 7. Proliferated iris and ciliary body.

Fig. 2.—Anterior, fig. 3, posterior portion of the globe but little magnified; loupe ($\frac{2.5}{1}$).

In fig. 2 the anterior part of the globe seems to be compressed.

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[1] *Klin. Monatsblätter*, 1877, p. 405.

[2] "Mooren über symp. Gesichtsstörungen," Berlin, 1869, Anhang.

[3] *Utrechter Jahresbericht*, 1865, p. 58, 3.

[4] The author, whose paper appeared in Aug., 1881, could of course not compare an elaborate article by Dr. Ayres, of New York, which appeared in the September number of the English edition of these ARCHIVES, vol. x, No. 3. Dr. Ayres reports the examination of 8 eyes removed for sympathetic ophthalmia by Dr. Knapp. Some of them seemed to have exhibited an earlier stage of irritation of the ciliary nerves than that to which the author has referred. Some showed, in the main, just such conditions as he records, and again conditions still further advanced than a simple slight infiltration of the nerves, viz.: total suppuration and partial destruction of the ciliary nerves. In some, A. also refers to the enormous thickening of the choroid, and in one case to true tubercles in the iris but not in the choroid. The description is illustrated by a plate, Tab. vi, *b*. EDITOR.

Figs. 2 and 3.—1-7 as in fig. 1. 8. Collapsed lens capsule. 9. New-formed connective tissue behind the ciliary body. 10. Exudation between the pigment layer and that of the rods and cones. 11. Exudation between the lam. vit. chor. and the pig. layer of retina. 12. Protruding iris. 13. Optic nerve.

Fig. 4, *a* and *b*.—Ciliary nerves, teased preparation; nuclear coloration, magnified 275:1. *a*, somewhat more; *b*, less changed part. 1, normal nerve nuclei; 2, round cells.

Fig. 5.—Section through the choroid magnified 275:1. 1. Epitheloid elements. 2. Giant cells. 3. Cross section of blood-vessel. 4. Capillaries. 5. Pigment cells.

A NEW CASE OF PULSATING EXOPHTHALMUS OF BOTH EYES.

By Dr. A. NIEDEN, of Bochum.

(Translated by William C. Ayres, M.D., New York.)

BY the presentation of a fourth case,[1] it would seem that chance had particularly favored me with bringing all the forms of the above disease to my personal observation.

The history of this newest case does not give us an etiology or pathogenesis which has not been made known by the researches of Sattler,[2] but it seems to present some peculiarities of sufficient interest for publication. For instance, the disease affected both eyes at the same time, a condition so rare that only four other cases of it are on record.[3]

There were other great peculiarities, and a new complication of symptoms, such as a complete loss of the sense of smell. But we will let the case speak for itself.

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[1] *Zehender's Klin. Monatsbl. f. Augenk.*, vol. xiii, p. 38.

[2] Pulsating Exophth. in Graefe and Saemisch's *Hdb. d. ges. Augenheilk.*, vol. vi, 2, p. 846 u. f.

[3] Velpeau: "Leçons Orales," vol. iii, p. 437, 1841, and

a. Cadwell: Erectile tumor of the orbit. *Bost. Med. & Surg. Journ.*, vol. xxiv, 1840.

b. Halstead (Noyes). *N. Y. Med. Jour.*, March, 1869, p. 664.

c. Morton: Orbit. aneur. disease and protrusion of the eyeball. *Amer. Jour. of the Med. Sci.*, vol. lx, July, 1870, p. 36; and Harlan: Case of traumatic aneur. of orbit. *Ibid.*, p. 46.

d. Grüning: A case of vascular protrusion of both eyeballs. Ligation of the left common carotid. Recovery. These Archives, vol. v, p. 40.

Mrs. Uhlander consulted me on March 3, on account of double images, which she had had for a few months, and which were of a very troublesome nature. They were present both for far and near vision. They were less when she looked to the left, and she was therefore in the habit of turning her head to the left in order to do away with them. On account of them she suffered a kind of vertigo which immediately disappeared on closing the eyes. She did not complain of headache. On further examination she said that on July 7th of the previous year she had had a severe fall on the back of her head. She fell from a step-ladder on the pavement. She was unconscious, and suffered from bleeding at the nose, but not from the ears. She vomited frequently, and was carried to the hospital. She regained consciousness after twelve hours, when she complained of continuous severe headache over the front and back part of her head, besides a peculiar noise in the left side of her head. The ear had not suffered, but the hearing was somewhat interfered with by the noises. The bleeding at the nose had subsided. After three days she could get up, and by request she was sent away from the hospital, not suffering from any grave head symptoms. The headache continued the same, and also the noises, but her general feeling was better, so that in fourteen days she could do her housework again. She noticed, however, that she could not smell, even the most pungent odors, but they sometimes made her sneeze. With this exception she experienced nothing unusual, and also a pregnancy of five months was not interfered with by her accident. Accordingly, on the 11th of November she was delivered of a strong healthy boy, and her confinement was entirely normal. Fourteen days after her delivery, or four and a half months after her accident, without having felt any thing peculiar, she noticed a sudden increase in the noises on the left side of her head, extending, at this time, also to the right side, and simultaneously a sense of pressure in her left eye. After a few hours her husband said he observed that the left eye was apparently more prominent than the right, and the patient complained of a continually increasing pressure from behind it. One morning she discovered that she saw double, and had such vertigo when she got up, that she had to retire again. She had loud noises in her head ; the lid of the left eye was greatly stretched ; great sensibility to pressure behind the eye. On the next day the left eye was more prominent, and the right commenced to protrude also. The

white of the eyes was red ; left more than right, and the upper lid of the left eye appeared swollen. She also now felt a sensation of pressure behind the right eye, as if the eye was pushed forward with great force. The double images were very annoying. When quiet all her symptoms were less severe. In the morning, after a good night's rest, the eyes were not so prominent, but became more so during the day, when her other symptoms also increased. The patient now remained quiet, doing no housework, and her condition gradually improved. First the right eye began to recede into the orbit ; the white of the eyes became clearer, and a dark discoloration of the lids began to disappear. The recession of the left eye was much slower, and the diminution of the tumor was always more conspicuous in the morning. The subjective symptoms of noises and beating in the head remained stationary. In the morning the double images were not so annoying as in the evening. There were no other permanent defects of vision.

Eight months after having fallen on the back of her head, and fourteen weeks after the appearance of the exophthalmus the patient consulted me.

She was 36 years old, and of small stature ; had a peculiar stare which was caused by the protrusion of both eyes. The left eye was prominent, and had compressed the lid, so that it had a dark, livid color ; same in the right lid. The right eye was more prominent than normal, causing the patient to look as if she had morb. Basedow. A rapid examination of the heart and throat, however, soon showed this not to be the case. The inspection of the conj. bulbi showing large tortuous veins running radially, suggested some disturbance in the blood circulation in the retro-orbital cavity. There was nothing abnormal in the pupil, nor in the blood-vessels of the iris. The stasis in the conjunctival veins was less marked in right eye, but single dilated veins ran over the sclera. An effort to press the eyes back into their orbits, met with a strong resistance, especially in the left. If both hands were on the eyes at the same time a rhythmical pulsation could be felt in both, which was simultaneous with the beat of the pulse.

When the ear was applied to the left eye, a noise was heard which was not continuous, on account of a regular increase and diminution in the tone, which was also simultaneous with the pulse beat. The same was heard in the right eye, but not so loud. The bruit was heard over the whole anterior part of the head,

but louder over the eyeballs. She did not complain of pain on pressing upon the eyes. Compression of the left carotid caused instant cessation of all the symptoms on both sides, but a faint noise was still heard in the eye. Compression of the right carotid alone had no effect. She could not stand simultaneous pressure on both, but she experienced nothing unpleasant in compressing the left alone. The left eye was dislocated somewhat downward and inward, but its motions were normal, both as to its own movements and to binocular fixation. The only defect seems to have been upward and outward, where the left eye was somewhat restricted in its movements.

The appearance of double images will be seen to have been the result of the exophthalmus and not of muscular paresis. The ophthalmoscope showed both of the eyes fairly normal; in the left there was injection of the vessels of the retina and choroid, but pulsation could not be made out. S oc. utr.=1. F normal.

In this case we must consider that the cause of the disease was the injury she received, and that the left eye was primarily, the right secondarily affected. All the symptoms commenced four and a half months after the injury. From the symptoms it can be concluded that the fall produced an internal injury at the base of the skull; and besides this, the fact that immediately after the injury she lost all sense of smell, should make us consider that a fracture of the anterior part of the base of the skull was probably done by contre-coup. Since the other symptoms point to the presence of a rupture of the left internal carotid in the cavernous sinus, we may also conclude that there was a comminution of the lamina cribrosa of the ethmoid bone, which lies just beneath the olfactory bulb. In the same way a splinter of bone must have done direct injury to the walls of the left carotid artery. We must also consider that the rupture was not an extensive one, since the subjective symptoms of noises in the left side were present without any striking objective symptoms as the result of this communication of the arterial and venous systems of the ear. Several months elapsed after the injury, and indeed it required a further disturbance of pressure (she was delivered of a child in the meantime) to cause a more extensive rupt-

ure of the arterial walls, to produce the later symptoms. The rapid protrusion of both eyes, the venous stasis in the conjunctival blood-vessels and those of the lids, and the complication of the right eye twenty-four hours after the left, force us to consider that a later rupture occurred, which so changed the circulation in the sinus circularis, that it had a great influence on the circulation of the right orbit. It does not seem probable that the fracture of the ethmoid bone could have ruptured both internal carotid arteries, and indeed the entire history contradicts such an idea, since a whole day intervened between the exophthalmus of the left and that of the right eye. The changes produced by pressure on the left carotid, and the fact that pressure on the right had no effect, indicates that the condition of the right eye was only a secondary complication.

It is also of interest, that the principal rupture of the artery did not occur during the act of labor, but that it was thereby probably only prepared or facilitated.

As to the further course of the case, I would remark that, since it had improved so much of itself, I thought it better to wait awhile before advising any active interference.

Since she could easily bear pressure on the left carotid artery, I showed her and her husband how to do it, and told her to cause it to be done for several hours every day. I could not detect any diminution of the bruit after the pressure was discontinued, nevertheless the patient said the subjective symptoms were improved, but I am of opinion that it will be a long time before such treatment can do away with the objective symptoms of double images, pulsation, etc.

I will not undertake to ligate the carotid artery as long as she nourishes her child, but at any rate will give the termination of the case at some future period.

SOME OBSERVATIONS UPON TUMORS OF THE EYE.

By Prof. E. ADAMÜK, of Kasan, Russia.

Translated by Dr. Porter Farley, of Rochester, N. Y.

(*With plate* ii.)

THE interest pertaining to the subject of ocular tumors prompts me to publish some of my observations upon them. My chief object is to describe some cases of melanotic tumors of the eyeball, which, as is well known, are not of frequent occurrence. Hirschberg, in describing a case of pericorneal melano-sarcoma, remarks, that such tumors are among the rarest neoplasms of the eye. Noyes also, after a critical analysis of all the cases known to him, concludes that this kind of tumor is very rare. I accordingly present some observations relating to cases which have been brought to our clinic.

Case 1.—*Epi-ocular melano-sarcoma.*

The first case was that of Sarah Wagopowa, a Tartar, who appeared at the clinic with a tumor projecting from the left orbit. On account of its unusual size I caused it to be photographed (see fig. 1, plate ii).

The cut shows the breadth of the tumor, and the unevenness of its surface, from which blood oozed at various places, and which was of a dark grayish color. The patient was a strong, healthy brunette, who, according to her own statement, had not exposed her eyes to any unfavorable influences, and had experienced no severe sickness, although she had suffered from intermittent fever

of a mild type. She was unable to give any cause for her disease. The tumor appeared some years before, though at exactly what time she could not state. It had at first the appearance of a black nodule upon the lower part of the eye. It grew slowly. She had also, in front of the ear, under the skin, a smooth, long, hard tumor, as large as a walnut, which appeared like an hypertrophied and degenerated lymphatic gland. No further extension of the disease could be seen. It had developed so far and showed such a tendency to spread, that its removal was imperatively necessary. To this the patient consented. As shown in the cut the tumor extended so far beyond the limits of the orbit, that it was impossible by digital examination to determine what were its connections with the eyeball and with the walls of the orbit. Its mobility indicated that it was not attached to the latter. When the patient was chloroformed, an incision was made in the direction of the outer angle of the lids. The finger could then be passed deeply into the orbit, and it was found that the tumor was not adherent to its walls, and furthermore, that the posterior surface of the eyeball was not involved in the growth. The removal of the tumor was begun from this side. The method followed was that of ordinary enucleation, in which the recti muscles and optic nerve are severed as nearly as possible to the eyeball. Anteriorly it was easy with the scissors to detach the tumor from the eyelids. It then appeared that the lids were scarcely wounded, but they were decidedly atrophied, for they had been stretched and pressed by the growth. After the removal of the tumor and eyeball an examination of the orbit was made. The degenerated gland, although it had no strong adhesions, was then removed. As the tumor was quite hard, a section was immediately made through it, when it was discovered that it was entirely extra-ocular,—that is, it did not penetrate the eyeball. It consisted of two parts, the smaller of which lay directly opposite the cornea (fig. 2), while the larger part surrounded the lower portion of the sclera, extending back almost to the optic nerve. The upper and outer part of the eyeball was nearly free. That part upon the cornea was less pigmented than the other, which, upon its cut surface, appeared almost black. All this is shown in the cut. Both parts of the tumor lay close together, but between them was a scarcely noticeable furrow, which, nevertheless, extended in as far as the sclera. At a part somewhat outside the vertical meridian of the eye, at the margin of the cornea, the two parts of the tumor united into

one root which sprung from the sclera. Within the eye, at its outer part, the retina was partially detached, as is somewhat indistinctly shown in the cut. Under the detached retina, upon the choroid and sclera, were no traces of the tumor. Microscopic examination of different parts of the tumor showed it to be of a sarcomatous character, with irregular pigmentation of some of the cells and of their large nuclei. Irregularly scattered masses of almost free pigment were visible. This is all shown in the cut (fig. 3). The enucelated lymphatic gland presented the same appearance. Healing proceeded regularly, so that after three weeks the patient left the clinic fully recovered.

Here we have the pericorneal melano-sarcoma in the highest stage of its development. The case shows that these tumors have very little tendency to penetrate the eyeball. In this case the inner layers of the sclera and cornea were not affected, so that the tumor could be detached without injuring the eyeball. It is difficult to say whether by such an operation a reappearance of the disease could be avoided, but it is easily demonstrable that the tumor simply spreads over the surface of the eyeball. Its slight tendency to penetrate the ball is the good feature of this tumor, and this tendency is apparently less the more pigmented the growth. This conclusion is deduced from the following observations.

CASE 2.—*Extra-ocular and intra-ocular sarcoma.*

Alexander Curmin, a healthy peasant, 35 years of age, appeared at the clinic. All the dimensions of his left eye were greatly enlarged. It was impossible for him to close his eyelids. He could not state exactly when his trouble began, but his attention had been called to it some months before by this inability to close his eyelids. No signs of violence were to be seen, and there had been no inflammation about the eye. Upon external examination it was easy to see that the cornea was intact; but the opaque lens lay immediately behind it, so that the anterior chamber was obliterated. The pupil was drawn over to one side, as in extreme cases of glaucoma.

With such a typical picture of the glaucomatous process I cannot forbear calling attention to some of its symptoms.

For instance, it was evident in this case that the adhesions of the peripheral part of the iris with the cornea were due to increased intra-ocular pressure. That is to say, they were due to some influence behind the dislocated lens, but they were in no sense the cause of the increased pressure. I therefore do not attribute to these adhesions the slightest causative influence upon glaucoma; but I consider them like the excavated papilla, the shallow anterior chamber, the dilated pupil, the cataract, etc., as results of an increased intra-ocular pressure.

Judging from these symptoms alone this would have been considered a case of glaucoma; but upon consideration of the comparative youth of the patient and the symmetrical enlargement in all directions of the eyeball, which was all the more noticeable from the approximation of the lens to the cornea, an intra-ocular tumor was suspected. Enucleation was proposed, which, on account of the deformity and the frequent lancinating pain, the patient consented to. The operation was begun from below, where the surface of the ball was most regular, and was conducted in the usual manner, being completed with the scissors. After the detachment of the muscles it was easy to feel with the finger that the tumor was attached to the optic nerve, which, accordingly, was cut through, and removed with the eyeball. Upon examining the bottom of the orbit it was found that portions of the tumor still remained about the stump of the nerve, and to remove all traces of these it was necessary to make a few strokes with the curved scissors. The bleeding was very slight. Healing was rapid, so that after two weeks the patient could wear an artificial eye, and was dismissed from the clinic.

The enucleated eye was so hard that a section of it was made immediately, when it appeared that the tumor was almost entirely extra-ocular (see fig. 4, plate ii). This cut shows the remarkable thinness and conical shape of the cornea, and the extreme atrophy of the iris, of which only traces are to be seen about the base of the cornea. The tumor occupied the upper part of the eyeball, and had extended over the optic nerve. Upon the surface of the

ball, in addition to its connecting membranes, it was covered with a thin, dense membrane, which was doubtless the thickened capsule of Tenon. The same cut shows that at a point near the equator the outer layers of the sclera have been penetrated by the elements of the tumor. Aside from the displacement forward of the cataractous lens the interior of the eye seemed upon casual inspection to be in the normal condition. But upon closer examination two roundish elevations could be seen upon the surface of the ciliary body at the points marked *a* and *a*. A section through these elevations showed that they were caused by the development of the neoplasm in the tissue of the ciliary body. The pigmented layer alone was not invaded. The thickness of this part was about 3 *mm*. This degeneration of the ciliary body was separated from the principal tumor by the almost normal sclera. But after making several sections it could be seen that here and there the elements of the tumor had penetrated the sclera, as shown in the cut.

The elements of the tumor penetrated the sclera in zig-zag and oblique directions. The growth being so large externally and so small within the eye, the conclusion was unavoidable that it had begun externally and later had penetrated the ball. Since this extension in the region of the equator had followed the direction of the canal of the venæ vorticosæ, which had been exposed to the pressure of the tumor outside of the eye, a decided stasis must have been caused in these veins. This caused all the signs of a glaucomatous process, viz., the increase and liquefaction of the vitreous, the obliteration of the anterior chamber, the displacement forward of the lens, the adhesion of the iris, etc. Since the tumor had developed at a late stage within the eye and had not acted suddenly to displace the lens and cause the atrophy of the iris which we here see, these changes must have been due to the influence of the increased intra-ocular pressure which is here so strongly marked. This observation convinced me of the importance of stasis in the venæ vorticosæ as an element in exciting the glaucomatous process.

In this case we observe also a pericorneal tumor, but one which penetrated the eye. The color of the tumor indicated the presence of but very little pigment. Upon microscopic examination the same elements were seen as in the previous case; but there was very little pigment, so that the word "melanoid" was here scarcely applicable.

CASE 3.—*Episcleral melano-sarcoma removed with preservation of the eyeball.*

In addition to these two cases and soon following them, I saw a case of extra-ocular tumor upon the under surface of the right eye of a peasant 40 years of age. The patient's eye could not be seen, but the space between his eyelids was occupied by a prominent black, smooth tumor, as large as a walnut, which was still visible when he attempted to close his lids. Only by forcibly distending the eyelids was it possible to see that the cornea turned upward and was transparent. V =o. Upon opening the lids it was easy to see that the tumor was on the under surface of the sclera. It began at the margin of the cornea, and extended back to the equator. The tumor is shown in cut fig. 5, plate ii, in which *A* shows its surface, and *B* a section made after the preparation had lain a month in alcohol. Both are of natural size. The patient, as long as he could remember, had had upon the under part of this eye a black speck, which had increased rapidly of late years, but which could still be covered with the eyelids. For the last six weeks, however, the tumor had projected beyond the lids so that it was impossible to cover it. The eye was irritated; there were weeping and strong blepharospasm even in the other eye. This case was easily diagnosed as melano-sarcoma, of the nature described by Hirschberg, in the article before referred to. In view of Hirschberg's case and my own observations, all of which made probable the superficial character of the tumor, I determined to remove it without sacrificing the eyeball. This was immediately done. The growth was easily removed with the scissors and scalpel. The subjacent sclera appeared perfectly healthy. Healing was rapid, so that five days later no trace of the wound could be seen. The eye retained its normal position and mobility, and there was binocular vision. The patient was positively charged to return to the clinic upon the appearance of the slightest signs of a new growth. More than a year has since elapsed,

and there is no return of the disease. Section of the tumor showed a dense black surface. At one point, marked *o* in the cut, there was a colorless spot. Upon microscopic examination it showed the same appearance as that of fig. 3, viz., spindle-form sarcomatous cells, more or less pigmented.

This case shows that these tumors can be easily removed without sacrificing the eyeball, and that the earlier the operation is undertaken the easier it will be. The other cases show that even when considerably developed they have very little tendency to penetrate the eyeball, and all the less tendency so to do the more pigmented they are. Therefore, even when quite large, their removal may be attempted without the enucleation of the eye.

The etiology of these tumors can be explained only on Cohnheim's theory, that they develop from the remains of the primary ocular vesicle in cases of coloboma oculi.

It is well to state the entire number of ocular tumors which have been seen in this clinic. There have been 58 out of 16,000 accurately registered patients. Of the 58 cases, 21 occurred in women. Of the whole number 5 were cases of exostosis of the orbital walls. There were 37 cases of various degenerations of the lids; so that there remained only 16 cases of primary tumor of the eyeball. Of these there were 7 cases of degeneration occurring in small children. The remaining 9 cases were in older people, and the growths were not greatly developed. The ages of those not elsewhere referred to were 21, 26, 45, and 48 years. All were men and no operations were performed on them. There was also a patient, 55 years of age, whose eye was greatly displaced forward. It was of normal size, but the cornea was destroyed so that its interior could not be seen. This patient, on account of his pain, willingly underwent operation. It proved that he had melano-sarcoma of the choroid. In this case the tumor occupied only the posterior half of the orbit, and had developed principally upon the optic nerve, which had attained a diameter greater than that of the eyeball. This condition had caused the exophthalmus and degeneration of the cornea.

CASE 4.—*Intra-ocular melanoma, causing glaucoma, and subsequently shrinkage of the globe.*

The last of this class of cases was that of a woman 66 years of age. The history of the tumor was somewhat unique, so that I did not determine upon publishing a detailed description of it until after I had been assured of the possibility of such a result by a description, given in the above-named article by Dr. Noyes, of a case which occurred in the practice of Dr. Mathewson, of Brooklyn.

This woman, 65 years of age, consulted me in May. She had the decided symptoms of glaucoma in the left eye, which, according to her statement, had long ago lost its sight. Until recently she had suffered no pain, but now it had begun, accompanied with inflammation. The diseased eye was hyperæmic; the pupil was dilated; the anterior chamber was shallow and there was cataract. The interior of the eye, therefore, could not be seen. The ball was stone-hard. In view of these symptoms a diagnosis of glaucoma was made and iridectomy was recommended. But as the clinic was at this time closed, and as the patient would not submit to an operation elsewhere, it was necessary to resort to therapeutical measures. Quinine was ordered internally and eserine locally. No more was seen of the patient during the summer. In September, however, she appeared again. Her eye was atrophied to the size of a bean. In spite of this, pain recurred from time to time; so that the patient willingly entered the clinic to submit to an enucleation. As I had previously observed such an atrophy, although without pains, as a consequence of glaucoma, I had predicted this result for this case. After the eye was removed I noticed the black color of the section of the nerve, and accordingly examined the eyeball. Upon cutting though it I found that the entire space within the shrunken sclera was filled with a black mass which appeared to consist only of pigment. No other parts of the eye could be distinguished. Upon microscopic examination this black mass appeared to be nothing else than a carcinoma melanodes, whose elements could be seen upon the cut end of the nerve, giving it its black color.

There can be no doubt in this case of the early existence of the tumor in the eye, and that the glaucomatous attack was due to its development. It is difficult to say what caused this unusual ending of the tumor. Whether the atrophy was due to

insufficient blood supply, stoppage of the vessels, or their rupture in consequence of the pressure of the sclera, which at this age is so inelastic, or whether it was due to some other cause, is hard to say; and all the more so for the reason that upon the optic nerve, where the above-named conditions did not exist, and where, after the removal of the eye, there followed no return of the disease, no further development of the tumor was noticeable.

Kasan, Feb. 15, 1881.

SYMPATHETIC INFLAMMATION.

By S. C. AYRES, M.D., Cincinnati.

THE following cases are reported as having some bearing on the very important and still obscure subject of sympathetic ophthalmia. An advance has been made in our knowledge within the past few years by the careful observations and examinations of Mauthner, Alt, Snellen, Brailey, and many others. The question of the transmission of sympathetic ophthalmia is not yet settled, but we are nearer its solution than we ever were, and more rational methods are now in vogue for the treatment of the sympathetically affected eye, as well as the injured one, than were formerly. As we have still much to learn, I take the liberty of presenting these cases somewhat in detail. They have a direct bearing on the subject of the transmission of the sympathetic influence, and show that the incarceration of the optic and ciliary nerves will cause sympathetic irritation and plastic iritis, and that neuritis is associated with a sympathetic iritis serosa.

Case 1.—*Stump after panophthalmitis enucleated. Sympathetic ophthalmia one year later, cured by excision of optic nerve.*

Mrs. D., 46. The records of the Cin. Hosp. show that she was admitted Dec. 23, '72, on account of threatened panophthalmitis of the left eye. The following history was obtained from her. About ten years ago she had a purulent ophthalmia, resulting from the application of her own urine to her eye for some trivial trouble. Having a specific vaginal discharge at the time, her

treatment was followed by a violent purulent inflammation, which caused sloughing of the left cornea and the subsequent development of a corneal staphyloma. She says that the staphyloma was punctured several times on account of severe pain. About one week before admission the eye became painful. She continued to do housework until the excessive pain forced her to enter the hospital. When first seen the lids were œdematous, the conjunctiva chemotic, and the ball exquisitely sensitive. I proposed an immediate enucleation, but to this she would not consent, and warm poultices were ordered. The inflammation subsided as usual, and about six weeks later I enucleated the now slightly-shrunken globe. There was nothing unusual in the operation, and I did not think that I severed the optic nerve too close to the ball. The incision healed kindly, and she was discharged March 13, '73.

On Feb. 24, 1874, she was readmitted with well-marked symptoms of sympathetic inflammation in her right eye.

She complained of pain in the left orbit, and said that it had annoyed her for several months. She got some relief by pressing firmly into the apex of the orbit with one of her fingers, or by crowding her handkerchief into it and holding it there. The conjunctiva presented a healthy appearance, but it was puckered around the end of the optic nerve, which now felt as if it had not been cut off close enough to the apex of the orbit. There were three cicatricial bands extending from it, resembling plaits or folds in the conjunctiva.

One extended upward and outward, one upward and inward, and the third downward and inward. They seemed to make some traction on the end of the optic nerve, for pressure on it gave her relief. She said that she used to sit for a half an hour or an hour at a time with her hand pressing firmly into the socket.

In the right eye the aqueous was turbid, the iris discolored, and there was some ciliary injection. The pupil was sluggish and there were some slight synechiæ. She could not read ordinary print, but could see objects dimly around the room. I immediately began a vigorous treatment for the relief of the right eye. The artificial leech was applied to the temple, frequent instillations of atropia were used, and warm poultices ordered.

As soon as the above symptoms had subsided, I anæsthetized her, and made a resection of the optic nerve by separating the conjunctiva and orbital tissue, including the ocular muscles, from

around the distal end of the optic nerve down to the apex of the orbit. Then seizing it with fixation forceps, I cut it off close to the bone.

The right eye steadily improved, and when she was discharged, May 11th, it was quite free from irritation, and her vision for near and far was quite good. The synechiæ soon gave way and the ciliary injection subsided. The pain in the left orbit also disappeared, and there was no longer a desire to make pressure upon the end of the optic nerve. From that time to the present she has had no trouble in her good eye. I saw her in fall, 1881, and she said that it had given her no trouble since the last operation.

CASE 2.—*Fully developed sympathetic ophthalmia cured by long-continued poulticing and other means.*

J. K. received an injury to the left eye Feb. 13, 1878, in the following manner: He was standing in the school-room near a window when it was shattered by a snowball thrown with great force by some one outside. Fragments of the glass inflicted an irregular *V*-shaped wound in the upper half of the cornea. The apex of the *V* was very near the centre of the cornea, and the incisions terminated at the corneo-scleral margin. Vision was lost immediately, but the eye was not painful until June 1st, when it became slightly inflamed.

July 15th.—After a hard day's work in the harvest-field, he found the vision of his right eye very much impaired. The eyeball was injected and slightly tender to touch. He applied some home remedies, but his vision continued steadily to fail. Finding that the inflammation would not yield, and becoming alarmed, he applied for treatment July 29th. The globe was found intensely injected, especially in the ciliary region; the iris was discolored, and presented a swollen, spongy appearance, and was completely adherent to the capsule of the lens. $V = \frac{2}{100}$. In fact the eye presented a typical picture of sympathetic iridocyclitis. A strong solution of sulphate of atropia was used, and the next day the pupil had dilated very slightly and irregularly.

From Aug. 1st to 5th he remained in the hospital, and warm flax-seed poultices were applied six hours each day, and the atropine was used every two hours. The weather being warm, he preferred to go home, where he could be more comfortable. He left with instructions to continue treatment, and report from time to time by letter. Nothing was heard of him until Nov. 12th,

when he returned with the statement that for *one hundred and five days* he had faithfully carried out instructions, and poulticed the eye daily from six to eight hours. Strange as it may seem, the eye was much better. The ciliary injection had disappeared; the pupil was moderately dilated, and he could count fingers at 15.'

The left eye being tender and irritable, it was enucleated, and a fragment of glass found imbedded in the ciliary body.

April 29, 1879.—The right eye has continued steadily to improve since his last visit. The sclerotic is clear and white, and the iris presents a healthy appearance. Vision is now $\frac{15}{15}$, and with 1.25 D M, V=$\frac{15}{30}$. He can read Sn. No. 1. The media are clear, and the fundus oculi is normal. A letter received from him a few months later says that he is studying telegraphing, and that his eye is comfortable, and he is able to read and write as long as he wishes.

Considering the condition of his eye when first seen, the recovery may be considered very encouraging, if not remarkable. The poultices had a quieting effect from the very first, and he needed no urging to continue their use. One might, on general principles, say that poultices applied to the cornea so constantly and for so long a time would produce maceration, purulent infiltration, and perhaps destruction of that all-important tunic.

CASE 3.—*Rupture of sclerotic—Sympathetic ophthalmia cured with prolonged poulticing.*

J. M. N., æt. 50, says that he was hurriedly taking a shovel away from one of his workmen, and seized it with his left hand, and drew it toward himself with such force as to strike his eye, with the effect of rupturing the sclerotic. Whether it was the end of the handle of the shovel or the first joint of his thumb which struck him he is uncertain. The accident occurred July 26th, and he came for examination Aug. 2, 1881. The rupture was directly upward, and nearly half an inch long and irregular. The anterior chamber was filled with blood, and there was extensive ecchymosis under the conjunctiva and in the orbital tissues. All vision was lost almost immediately after the receipt of the injury.

At present the eye is not painful. The edges of the rupture gape but are held by the conjunctiva. The right eye is perfect and presents no traces of sympathetic irritation. Rest and cold

applications were ordered, the calamity of sympathetic inflammation was vividly depicted, and the patient warned to return on the slightest suspicion of danger. Notwithstanding the repeated warnings, he paid no attention to the early symptoms of sympathetic trouble when they came, and did not return until about twelve days after the vision of his good eye had begun to fail. On Sept. 13th, the vision of his right eye was only equal to counting fingers at 18 inches. It presented all the well-marked symptoms of sympathetic irido-cyclitis. If we take his statements as to the time the eye began to fail, it was only thirty-six days from the date of the injury.

His left eye appeared very much as it did at his first visit. The ecchymosis had slightly absorbed, but the ball, so far as one could see, was apparently filled with blood. He was sent to the hospital, where he remained until Oct. 1st. During this time warm flax-seed poultices were applied from six to eight hours a day over the right eye. Occasionally he would apply one over the injured eye as it seemed to have a soothing effect.

The improvement in the right eye was slow but satisfactory. At the time of leaving he could count fingers at 10′, and the injection in the ciliary zone was much diminished, and the iris presented a more healthy appearance.

Upon his return, Oct. 13th, both eyes were found to have improved. Vision of R. E. $= \frac{20}{100}$, and with the left eye he could count fingers at 3′. The right pupil was moderately dilated. There were some synechiæ downward and inward. The optic disc was swollen and œdematous, and the retinal vessels at its margin were blurred and considerably arched forward by exudation underneath. The vitreous was clear, but the anterior lens capsule was dotted with minute pigment points from adhesions which had let go. The fundus of the left eye could not be seen, but there was in the vitreous a large grayish mass downward and inward, which moved freely and was probably the remnant of the intra-ocular hemorrhage.

Nov. 14.—Reported again. There was marked improvement in the right eye; V $= \frac{20}{40}$, and with +0.75 sph., V$= \frac{20}{30}$. The pupil was about as at his last visit, and the iris more natural in color. The papillitis was much better, and the outlines of the disc were clearly defined. With the L. E. counted fingers at 4′. He has continued the poultices from four to six hours a day since his last visit.

Dec. 16—The right eye was about as it was last month. The optic disc was clearer, with but slight traces of swelling.

March 6, 1882.—Vision in the right eye is now, with the correcting-glass, nearly perfect. The media are clear, the papillitis has entirely disappeared, the disc and the vessels in it are sharply defined. He has discontinued all treatment since his last visit in December, and he has been superintending his business. The eye gives him no pain, but when he becomes heated from exercise of any kind, he says his vision is slightly blurred.

The left eye has so far cleared that the disc can be seen, and appears elongated vertically owing to change in the curvature of the cornea. With +9D sph., he counts fingers at 14′. The iris has entirely disappeared, no trace of it being visible. The grayish coagulum has diminished in size.

In the case of Mrs. D. (1) we have a well-defined instance of sympathetic inflammation arising from the incarceration of the optic and ciliary nerves in the wound made by an ordinary enucleation. It is quite evident that considerable irritation had preceded the development of the plastic iritis. Her accommodation was greatly interfered with, and even the use of convex glasses did not relieve her. Then there was the desire to press something into the orbit, in order to give relief to the feeling of discomfort which she almost constantly experienced. As long as this pressure continued she was comfortable, but when it was discontinued the same disagreeable sensations returned. It seemed reasonable to conclude that there was a source of irritation at the apex of the orbit, and the issue of the case proves this. The removal of the stump of the optic nerve gave her complete relief. The irritation kept on increasing until she had a well-marked plastic iritis. Prompt and energetic treatment arrested its progress, and the resection of the nerve removed the cause of the trouble, and she made an excellent recovery. I saw her in the ward last December reading a newspaper, and she said that she had experienced no inconvenience since she recovered from the operation. In the case reported by Dr. Hasket Derby (1874), he made a resection of the optic nerve, which was followed by a marked amelioration of all the symptoms. This was

not, however, permanent, for in a few months there was an exacerbation of the symptoms resulting in permanent damage to vision.

Mrs. D. was not examined with the ophthalmoscope during this treatment, and it is therefore impossible to say what changes in the retina or optic disc may have occurred. Since treating the case of Mr. N., I greatly regret this, for I feel confident that the optic nerve participates much more frequently than is supposed. The turbidity of the aqueous in cases of acute iritis, and the partial closure of the pupil, and the deposit of pigment on the capsule, or the formation of a secondary membrane, may interfere with the inspection of the fundus. As the media clear up, the eye should be examined repeatedly to determine whether or no evidences of neuritis are present. Mauthner discusses the possibility of sympathetic inflammation arising from enucleation by causing a crushing of the ciliary and optic nerves, and the contraction of the stump of the nerve in the cicatrix. He spoke of a patient of his own who suffers from sympathetic irritation, following an enucleation, where the left eye is totally unfit for work. He attributes it to a sympathetic neurosis, and thinks that the irritation may lie anywhere in the nerve tracts.

Mr. N.'s (2) case is one of peculiar interest, on account of the ophthalmoscopic examinations which were made. We had positive ocular proof of the neuritis as soon as the media were sufficiently clear to allow an inspection of the fundus. As this inflammation subsided his vision improved, and at his last visit was almost perfect. Plastic iritis and neuritis are here associated, and it is more than likely that the same could be demonstrated of many other cases were it not for the turbidity of the media. In this case the poultices had a very grateful and soothing influence on the eye. He preferred to keep them on as they made the eye comfortable and relieved the pain. While he was at home he used them somewhat according to his own judgment, varying the number of hours each day according to the indications. His treatment was kept up fully four months, and the result is certainly most gratifying. Mauthner ob-

serves that "many more cases of retinitis are sympathetic than those in which clear and unmistakable evidence of the fact can be obtained."

Dr. A. Alt reports in these ARCHIVES, vol. v, the results of the examination of 110 eyes enucleated for sympathetic inflammation. He found histologico-morbid affections of the optic nerve and retina in 79%, and of the ciliary nerves in but 16⅔%. Sympathetic irido-cyclitis was observed in only 3⅓%, and sympathetic irido-choroiditis in 27½%. He concludes that the whole nervous apparatus of the diseased eye participates in the transmission of the affection to the other. It would seem from his results that the optic nerve is a far more important factor than the ciliary nerves in the transmission of this dreaded disease.

Prof. Snellen, of Utrecht, in a paper before the International Congress of 1881, thus summarizes his views on the subject of sympathetic ophthalmitis:

1. The hypothesis that sympathetic ophthalmitis is explained by reflex action through the ciliary nerves is devoid of all convincing proofs.

2. Sympathetic ophthalmitis may be looked upon as proceeding from a septic choroiditis of a definite type, not improbably resulting from an abnormal continuity between the external tissues and the uvea.

3. The morbid change of the vessels, the increase of the lymphoid cells, and, perhaps also, the accumulation of microphytal organisms, are the guiding signs that may indicate the direction in which the morbid process is propagated.

4. The path of the transmission is most probably along the lymphatic spaces of the optic nerve. In discussing the question of parasitic microphytes he gives his own and also Leber's experiments. He instances a case where after enucleating an eye he cut through the cicatrix, and examined under the microscope the material which he scraped from its edge. "All the field was a living mass." "The same was found all over the choroid. The sheath of the nerve carefully split showed moving bodies, apparently micrococci."

Dr. W. A. Brailey, London, says "that the physical condition of the ciliary nerves and blood-vessels will not afford the necessary explanation, nor will that of the sclerotic or episcleral tissue. It is not improbable that the inflammation may travel along the loose tissue between the dural and pial optic-nerve sheaths, but it is to be remembered that the inflammation of this is usually extremely slight compared with that of the uveal tract itself; and that sympathetic inflammation may occur, without any implication of the choroid, in the neighborhood of the papilla of the eye." The pathological changes which he notes are infiltration of the iris, the ciliary body, and choroid with lymphoid cells. There is infiltration in and around the walls of the retinal blood-vessels, especially upon the papilla. Optic neuritis is present, and also inflammation, which may be considerable or extremely slight in the intervaginal space of the optic nerve.

If an eye is suffering from sympathetic irritation only, and there are no evidences of plastic iritis, it would certainly be good practice to enucleate the injured eye, providing it is blind or so severely injured that it is likely soon to become so. We then place our patient on safe ground. If, however, the period of irritation is past, and we have to do with a plastic or serous iritis, we should delay the enucleation until all inflammatory symptoms have subsided. There may be exceptions to this rule in severely injured eyes with prolapse of the iris, or when it is quite probable that the foreign body is still in the eye. In Mr. N.'s case it would have been useless to have enucleated the injured eye at the time of his second visit. The result shows that it would have been unjustifiable, for he now sees enough to walk around with it, and I feel confident that in a few months the media will so far clear up as to give him considerably better vision.

The case reported by me in vol. v of these ARCHIVES, page 226, is another instance of the same kind. Here the sympathetically affected eye became practically useless, but the injured eye became a useful organ. His vision was $\frac{15}{40}$ when he left, and no unfavorable report has since been received. I had another case of rupture of the sclerotic a few

years ago, in the Cincinnati Hospital, which bears on this point. The patient's right eye had been blind for several years, but the left one was good up to the time of the injury. One night, going out of the house in the dark, he stumbled and fell on the corner of a small pine box and produced an extensive rupture of the sclerotic of the left eye. The rupture was upward, and bulged unusually from the blood which immediately filled the ball. He had pain for a few days, but it subsided, under the use of cold applications. He remained several weeks in the ward, but had only perception of light in the eye when he was transferred to the City Infirmary as a blind man. I did not see him until more than a year afterward, when, to my surprise, he walked into the office. I found that the scleral rent had closed, and that the media were clear, and that the optic disc could be seen. It appeared paler than normal, and was distorted from the deviation in the curvature of the cornea. With + 14 D = Ah 6 D ang. o, he could spell 20 Sn and of course could walk around comfortably. Here is a case where there seemed absolutely no chance for the injured eye. The clot was several months in clearing up, but just how long could not be determined. These cases are at least an encouragement to preserve an eye suffering from rupture of the sclerotic, providing that it is seen after the sympathetic symptoms have set in. Could it not also be an argument in favor of the early excision of an eye so severely injured? This would depend on the per cent. of such cases followed by sympathetic symptoms. In Mr. N.'s case we depended on him as an intelligent man to return upon the first evidences of sympathetic irritation, but he waited to try some home remedies first.

The profession is greatly indebted to Professor Mauthner, of Vienna, for his valuable work on sympathetic ophthalmia. He discusses the subject in a vigorous manner from a standpoint of close clinical observation, and his deductions are rational and fully substantiated. In speaking of the influence of the ciliary and optic nerves he says, " that there is not the least doubt that the sympathetic inflammation may frequently be transmitted along both paths at once, or at inter-

vals, so that many symptoms in sympathetic affections of the uveal tract (amongst others the functional disturbances) are not to be attributed to the inflammation of the uveal tract, but to a simultaneous inflammation of both retina and optic nerve." It is his opinion that an iritis serosa can be transformed into an iritis maligna by the operation of enucleation of the other eye. He has frequently observed that a simple plastic iritis which would have passed off as a mild attack is converted into an irido-cyclitis after the enucleation.

We may safely say that there are at least two things definitely settled with regard to the treatment of sympathetic inflammation. One is that the enucleation of the injured eye does not arrest or shorten the course of the disease, and the other is that an iridectomy should not be made until all symptoms of inflammation had entirely disappeared. In two of the cases reported in vol. 5, iridectomies were done, but they not only did not check the trouble but probably aggravated it. If they had been treated with poultices it is possible, if not probable, that some vision might have been retained. The beneficial effects of poultices in iritis, cyclitis, non-sympathetic irido-cyclitis, interstitial keratitis, etc., serve as an excellent argument for their use in sympathetic troubles. The above cases are not the only ones where they have been successfully used, but they are typical ones.

TWO CASES OF HEMI-ACHROMATOPSIA.

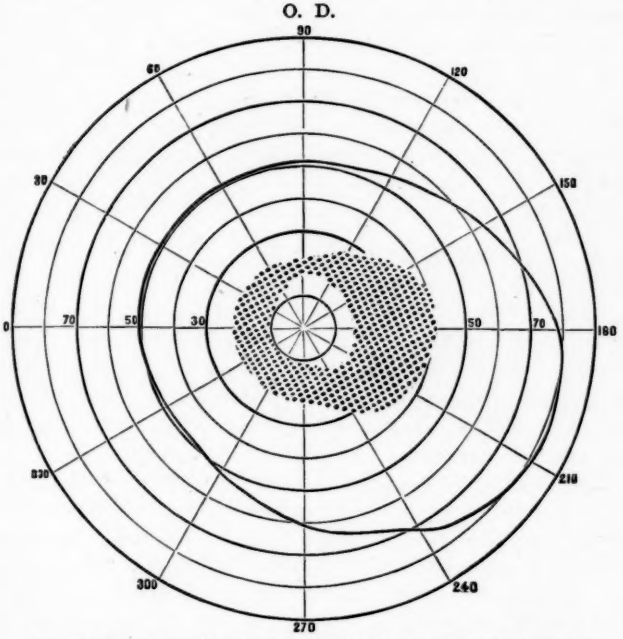
By HENRY D. NOYES, M.D., New York.

(*With six wood-cuts.*)

IN *Graefe's Archiv für Ophthalmologie*, Bd. xxvii, Abth. ii, S. 1–24, is an article by Steffan, which narrates an indisputable case of acquired color-blindness of both eyes, with retention of ordinary light-perception and of normal acuity of vision. One inference which he draws from the case, is that a separate centre must exist in the brain for the perception of color, and that it is independent of light-perception and of form-sense. In the Transactions of the International Ophthalmological Congress, at London, for 1881, is a remark, on page 61, by Prof. Dor, of Lyons, that he believed "that the seat of color-perception is in the brain, and not either in the eye or the peripheral parts of the optic nerve." His inference was derived from the asserted or supposed centric cause in the cases of loss of sight in which color-perception was found to be impaired. The two following cases had been seen, and the inference deduced from them, that there may be a separate centre in the brain for color-perception, before the above-mentioned statements had fallen under the writer's notice: further study of these cases leaves this theory in a more doubtful position.

Case 1.—Dr. W. O. S., aged 41, of Lexington, Ky., came to me Jan. 30. 1882. He is a man of very active temperament, and slender figure; has been disposed to insomnia since childhood, and seldom sleeps longer than six hours. Has practised medicine

since 1865, and been excessively occupied. He lectures on chemistry, teaches private students, and conducts a large private practice. He has had indigestion and neuralgic pains in lower limbs, which he thinks were connected with constipation. A few months ago he found the sight of one eye impaired, and consulted various physicians, viz.: Dr. Cheatham, of Lexington, Ky.; Drs. Williams and Ayres, of Cincinnati; Dr. Thomson and Dr. Weir Mitchell, of Philadelphia; Drs. Knapp and Agnew, of New York. He desired advice both because of the defect of sight, and because of general depreciation of health. He had taken strychnia hypodermically and



Over the dotted zone blue is recognized. In all other parts there is no color-perception.

found that its use would improve vision in about fifteen minutes, and the gain would last three or four hours. He says that his sight is better than it was a month ago, both in acuity and in the extent of the fields. My inquiries could not elicit any distinctive symptoms beyond the above statements. He had had no head-

ache or other local disturbances. But he was a typical illustration of what is called an intensely nervous man; one whose mental and nervous energy is being constantly and vigorously put forth: his speech is rapid, his movements quick, he was always alert. In the right eye vision was $\frac{20}{100}$. In viewing a long black line upon a white ground he observed transverse breaks in it of white spaces, which always preserved the same relative positions to each other. In the left eye $V = \frac{20}{200}$. By ophthalmoscope each optic nerve showed an extremely large central, so-called physiological excavation, which at once led me to feel the tension of the globe, which was normal. The tissue of the nerves was whitish, or indicated atrophy. No other lesions in the fundus.

The visual fields, tested by Förster's perimeter, were as follows. (See diagram O. D.) The extent was normal. The perception of color is limited to the recognition of blue over the annular zone, indicated by the dotted surface. For a circular space at the centre there was absolute color scotoma, and beyond the border of the blue zone no color could be seen. In the space between 210° and 240°, and about the latitude of 40°, he sometimes seemed to discern red, but would also confound it with green. But it was in a very limited region that this sensation could be excited.

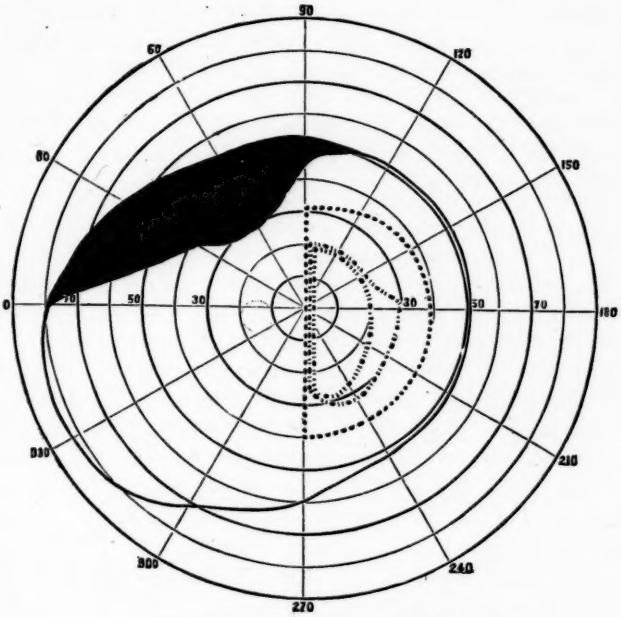
O. S. The visual field has a peripheral limitation on the upper and outer side, as shown in the diagram. The perception of light in all other parts is normal. The perception of color is absolutely wanting in the outer (temporal) half of the field, and the line of demarcation runs vertically through the macula lutea. On the nasal half the color-perception is normal, and the zones of green, red, and blue have about their usual extent and relations.

The discovery of this peculiarity in the color-sense of the left eye was new to Dr. S., and he appreciated its remarkable character. He did not know that he had any defects of this kind. Although in each eye there was deep excavation of the optic nerve, there was no sign of glaucoma, no increase of tension, no eclipses of sight, no sluggishness of the pupils, etc. In both eyes the ophthalmoscopic appearances were alike. The eye which was half color-blind had $V = \frac{20}{200}$; the other eye with central color scotoma, and a zone where only blue could be seen, had $V = \frac{20}{100}$.

P. S. Since the above notes were taken, and while the proof of this article was being corrected, I saw Dr. S., on May 26, 1882. His condition has improved both in general health and in vision. He has less dyspepsia and less of the neuralgic

pains which have always been common. To these he has always attached slight significance; he denies that they are lancinating, and regards them as having a gastric origin from dyspepsia. The question of lesion of the spinal cord has been raised when he has been examined by physicians, and by at least one eminent neurologist it was decided emphatically in the negative before I first saw Dr. S. Other physicians have believed that there is such a lesion.

O. S.



The outer dotted line is the limit for blue.
" middle " " " " red.
" inner " " " " green.

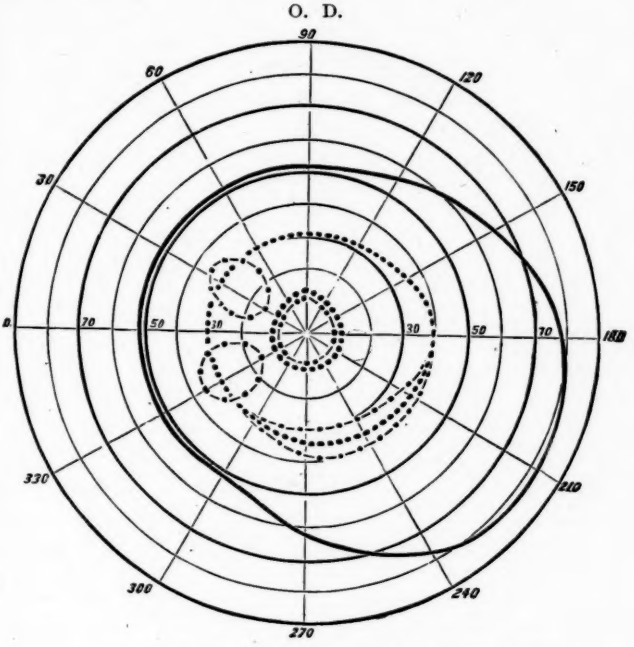
At present I find he has the so-called Robertson pupils distinctly marked—*i. e.*, they are habitually small and will not contract under bright light, but promptly contract and to a very small size under efforts of accommodation, and also contract in less degree upon ordinary movements of the globe. This symptom was also noted by Dr. Knapp and mentioned by him in a note to me. His neuralgic pains run down the crests of the iliac bones and the thighs, and

are aggravated by constipation. The optic nerves are whiter and more decidedly atrophic in appearance than they were four months ago. His acuity of vision he says has improved; he also says that in the eye which had hemianopia for color (the left) the color-perception has returned over a part of the half formerly deficient; in the other eye, which had only a limited zonular field for blue, that now green is visible on the centre, and red can be seen over small areas in some situations. These statements as to his vision I could not verify, nor could I make by actual testing another map of his visual fields, because he was pressed for time in getting ready for a trip to Europe. He had become extremely familiar with his visual symptoms, and expert in laying out the peculiarities in color-perception on a chart. On the whole, the aspect of his case inclines much more, in my opinion, than it did four months ago to the probability of there being a lesion of the spinal cord, notwithstanding the absence of ataxic symptoms.

The following charts (see pages 215 and 216) are made from Dr. S's own description, illustrated by diagrams also drawn by himself. They explain themselves, and it will be necessary only to refer to several points not heretofore mentioned, which were examined, though not in a very critical manner. In the left eye, the form-sense was much less acute in the supero-temporal quadrant than in other parts of the field—it was reduced to $\frac{1}{200}$ at 15° from the point of fixation—whereas the normal acuity existed in other portions, namely: this degree of vision at about 50° from the centre. This quadrant shows limitation of the V F and color-perception, as indicated by the chart. The form-sense in the peripheral parts of the right visual field was not reduced, while the central vision was about one fifth.

Case 2.—Mr. C. C., æt. 60; examined February 1, 1882. Twelve years ago sight began to fail in both eyes, and within three months was reduced to very nearly the condition in which it is now. It has continued steadily in this state without variation, as he asserted with positiveness. There has been no pain, nor phosphenes, nor obscurations. Pupils respond to light, but act sluggishly in dim light. The left is smaller than the right. The fixation of the left eye is indirect, its axis turning upward. Tension in both eyes about normal, although it seemed to be a little plus

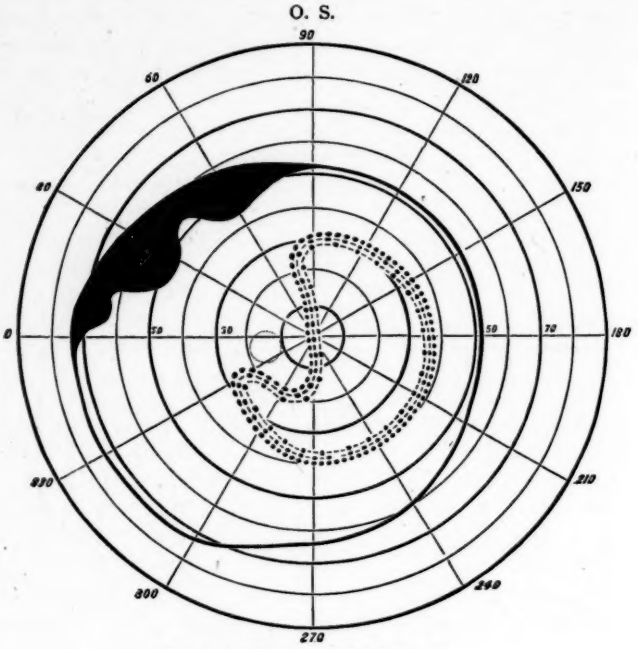
O. D. V = $\frac{10}{200}$; O. S. V = $\frac{6}{200}$. By ophthalmoscope, media clear; refraction emmetropic. Optic nerves in both eyes deeply excavated; the vessels displaced to the nasal side and concealed under the brim of the disc; on the temporal side the excavation slopes gradually up to the edge. The surface is bluish white, not mottled. Slight pressure evokes pulsation of the vessels. They are all



. . — . . — Shows space within which green is perceived.
. . . . . Zone within which blue is perceived.
. —— . —— . Space within which red is perceived.

small, and on the surface of the nerves almost none are to be seen. The ophthalmoscopic appearances are by some interpreted as indicating glaucoma simplex, while the predominant factor in the case is evidently atrophy of the nerve tissue. There is no other lesion. There have been no head symptoms nor indications of disease of the spinal cord except that the patellar reflex is absent. The visual fields are as follows: O. D. No limitation in light-per-

ception. In color-sense the nasal side is absent, and the line of division is vertical through the macula lutea. The temporal side



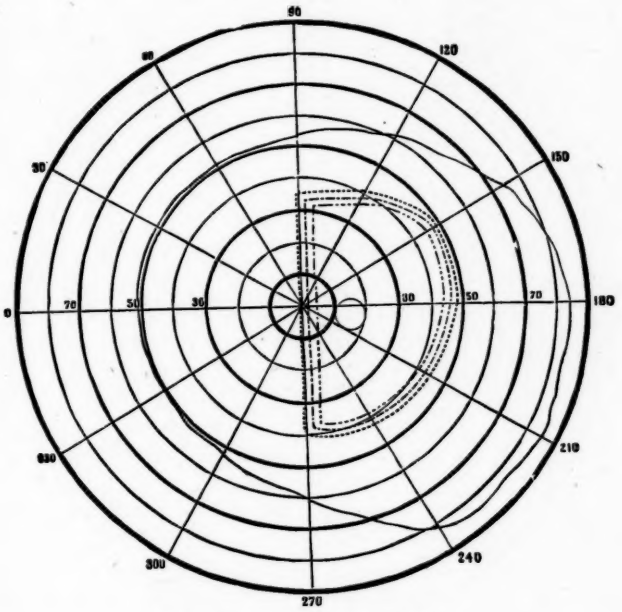
The dotted lines show the limits of
. . . . . blue.
. — . — . — red.
. — — . — — . green.

is sensitive to color; green, red, and blue are perceived over about an equal area, viz., to about 50°.

O. S. No peripheral limitation of field, but there is an absolute circular scotoma at the centre, of precisely 10° in diameter; here also there is no light-perception. Color-perception is wanting on the nasal side, and the line of division is on the vertical meridian. On the temporal side color is recognized to 40°, and for about equal areas for green, red, and blue. The case therefore shows normal fields in peripheral extent for light—and leaving out the central scotoma of the left eye, there is bilateral nasal hemi-anopsia for color —or bilateral nasal hemi-achromatopsia.

Remarks.—As already remarked a case of acquired color-blindness without injury to visual acuity or impairment of fields is reported at length by Steffan, see *Graefe's Archiv*, xxvii, ii, pp. 1–24, and he discusses, with much completeness, the subject of where the seat of color-perception is to be located. His patient was totally blind to green, and possessed very dim perception of red, yellow, and blue. He was affected in both eyes, and the cause was cerebral, and from the symptoms he, presumably, had apoplexy.

O. D.

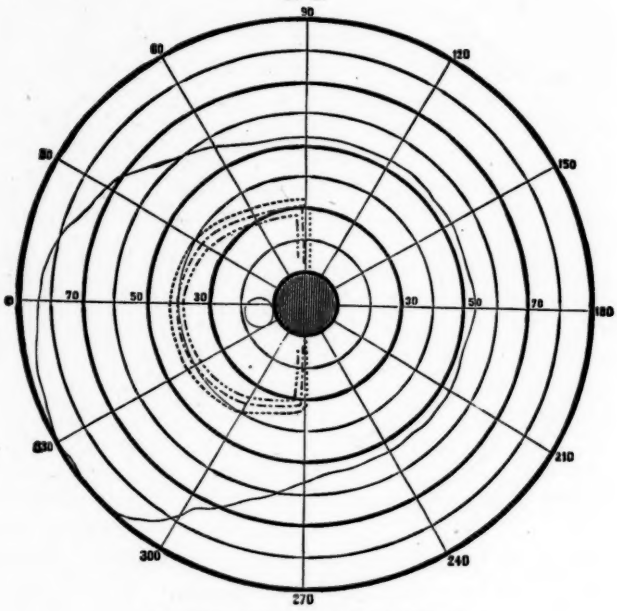


The outer dotted line indicates blue.
" middle " " " red.
" inner " " " green.

Samelsohn, see *Centralblatt für die med. Wissenchaften*, Nov. 19, 1881, No. 47, p. 850, records a case of hemiopic color-blindness without injury to visual acuity, affecting homonymous halves of both visual fields. This too was of

cerebral origin, and there was partial paralysis of the right arm and leg without loss of sensibility, and slight paresis of the right rectus superior muscle: all of which symptoms indicated apoplexy. He was examined by Samelsohn three months after the attack, and the ophthalmoscopic appearances were normal. In both eyes $V = \frac{1}{3}$; the visual fields tested by a white object were normal in extent, but on the left half of each field there was total blindness to all colors. The color-blindness and the paralysis were therefore in harmony as to the side of the brain implicated.

O. S.



The outer dotted line indicates blue.
" middle " " " red.
" inner " " " green.

These two cases, especially the latter one, seem to point forcibly to the existence in the brain of a color-centre in each hemisphere, distinct from the light-centre. There

are three cases quoted by Steffan, *l. c.*, p. 8, in which with homonymous hemianopia of the usual type there was total blindness for color over all of both fields. These cases, being the counterpart of Samelsohn's, might be interpreted as showing that the hypothetical color-centres of both hemispheres had been destroyed, while in only one hemisphere had the light-centre been damaged. But in these cases the history of the lesion indicates that it must have happened near the base of the skull, and removes the seat of injury from the hemispheres to some portion of the tractus or their continuation.

In the cases which I present there are no discoverable signs of brain lesion. In the first it was evident that the patient was suffering from cerebral exhaustion and over-activity. He had been carefully examined by neurologists and no disease of the brain discovered. By the ophthalmoscope it is true that an inordinately large excavation of each optic nerve was discovered—and this was of the kind which has been considered physiological, although the appearances were those of atrophy and at the most recent examination had decisively this character—notwithstanding in one eye the vision was 1. The symptoms pointing to probable lesion of the cord have been referred to in the postcript to the case. In the left eye, whose acuity was perfect, there was a small invasion of the field of light-perception at the periphery, and in the same eye there was on that side of the field total color-hemianopia. The other eye had a complete visual field for light-perception, with reduced vision, viz., $\frac{20}{100}$, and absence, in all parts, of color-sense, saving over a zone where only blue was seen, and some vague recognition of red over a small spot. The color-lesion of the left eye might be referred to a hypothetical cortical centre of the right hemisphere, or perhaps to some part of its tractus. But the color-lesion of the right eye must evidently be located in front of the chiasm, and be assigned to its optic nerve. While in this case the hemianopic features of the left eye suggest a lesion behind the chiasm, the quality of the field in the right eye points with extreme probability to the nerve as the seat of lesion.

In it we may assume either an impairment in the color-perception or of the conductivity of color-perception according to the structures to which we impute the original faculty of recognizing color—whether in the retina or in the nerve fibres.

In Case 2, there is a striking and symmetrical hemianopia for color, but the facts are even more incompatible with our theories than in the one preceding. It is the nasal halves of the color-fields which are deficient, and to bring them within the influence of a lesion of the brain or of the tractus, it is necessary to assume an exactly similar lesion of each cortical centre or of each tractus on its outer side—a supposition which is in a high degree improbable. If this be laid aside we must invoke a double symmetrical lesion in each optic nerve or in each retina. It must be remembered that each eye showed deep excavation of the optic nerve of glaucomatous type, and the case had by good observers been pronounced glaucoma. I myself, while willing to discuss the opinion, incline to regard nerve atrophy as the essential factor. Where, however, in this case is the origin of the sense of color to be placed? We may make the supposition that the optic-nerve fibres are capable of undergoing an alteration by which they lose the power of transmitting color-sensations, but do not lose the power of transmitting luminous sensations. This is really the fact in central color-scotoma. But even this hypothesis would not help us solve the difficulty, which arises from the symmetrical character and the necessarily double nature of the cause.

The question raised is whether the cerebral centre for color is to be located coincident with or separate from the centre for light. The physiological chain may still be considered analogous to that of other sensations, as of sound, or smell, or touch, viz.: that a peripheral organism, the retina, is the place where the peculiar reaction and impression of color is made; this reaction is conveyed along the optic nerve and tractus, and is taken cognizance of by the proper part of the brain. In other words, as with smell, we have perception, conduction, cognizance (or conception).

In the case of sound the last act is divisible into the cognizance of spoken sounds (speech), of noise, and of musical tones; and recent studies have shown that a separate centre may preside over each of these subdivisions of audition. The question is whether in vision it will turn out that a similar subdivision is to be assumed. The cases which I contribute seem to me to be calculated to bring confusion rather than clearness into the inquiry. In the first case, the partial return of the color-perception in the eye which was for a time hemianopic for color, may not invalidate a claim on behalf of a possible cerebral color-centre, because it is, of course, proper to assume that a better nutrition had begun to occur in the previously damaged tissue of the brain. Nor need the theory that in this case the spinal cord may be involved be regarded as an insurmountable objection, because we have only to suppose that the damaged fibres of the cord have passed through or mingled with the brain locality for color-sense, or with some part of the tractus on its way to that locality, and thereby accomplished indirectly the same mischief which was observed by Samelsohn in his case as the direct result of a lesion.

In the second case the necessity of supposing a perfectly symmetrical double lesion seems to me to make a very difficult obstacle in the way of a cerebral localization for color, and hardly less difficult in ascribing the mischief primarily to the retinæ, while only at the chiasm or along each tractus can we locate the trouble which is the impediment to color-perception in each nasal half of the fields.

FOREIGN BODIES TOLERATED IN THE BACKGROUND OF THE EYE, WITH PRESERVATION OF GOOD SIGHT.

By H. KNAPP.

(*With two wood-cuts.*)

THE observations of foreign bodies, which have pierced the walls of the eye and remained embedded in the retina without producing material injury, are still rare, yet the cases, so far as they have come to my notice, have so many striking features in common, as to be almost sufficient for a general description of the occurence and consequences of this traumatism. Though in the great majority of instances foreign bodies which penetrate into the interior of an eye entail its ruin, and too frequently even that of its fellow, they are occasionally met with situated harmless in every part of the globe. Twelve cases are on record where they have lain innocently in the retina without great, or even without any, impairment of central vision.

The first publications were made by A. v. Graefe, in 1857 (his *Archives*, vol. iii, p. 347, etc.). He relates *three* cases in which small pieces of metal penetrated the capsule of the eye, reached the inner membranes, and remained on them, not encapsuled, but free, causing hemorrhages and transient opacities of the vitreous, yet no detachment of the retina or vitreous, leaving local destruction of the retina, irregular choroidal pigmentation, a corresponding scotoma, but otherwise useful sight, and no protracted irritation.

The *fourth* case is by Jacobson, 1865 (*Graefe's Arch.*, vol. ix, No. 1, p. 129, etc.). A small piece of stone penetrated the cornea and lens, produced cataract, which was successfully removed by linear extraction. Later the vitreous clear throughout; the foreign body near the optic disc, one end in the sclerotic, the other free; in choroid and retina a rupture with widely gaping edges; a corresponding defect in the visual field. S $\frac{1}{8}$.

The *fifth* case is by Jacobi, 1868 (*Graefe's Arch.*, vol. xi, No. 1, p. 938, etc.). A chip of iron, 0.75 *mm.* broad, with its sharp end in the retina, its broad end free in the vitreous, was encapsuled; had a dark contour from remnants of ecchymoses and hypertrophy of choroidal pigment. Lens intact; a thread in vitreous indicated the course of the foreign body. Defect in F. V = 1.

The *sixth* case is by Hirschberg, 1874 (*Klin. Beobachtungen*, p. 103). A fragment of metal passed through cornea, iris, lens, and vitreous, stuck in the retina, about 9 *PP.* distant from the optic disc, was perfectly black, oval, not prominent, not encapsuled, but surrounded by a white border. Vision at first good, a year later reduced to $\frac{3}{200}$ on account of progressed opacity of lens.

The *seventh* case is likewise by Hirschberg, 1875 (*Berl. klin. Woch.*, 1875, p. 300). A chip of iron in the fundus oculi, one end free in the vitreous, black, surrounded by a bright white zone. Circumscribed scotoma. V, Sn $1\frac{1}{3}$ at 7″, eight months later.

The *eighth* case is reported by G. Strawbridge, 1878 (*Trans. Am. Ophthal. Soc.*, vol. ii, p. 305). An iron splinter the size of a pin-head had penetrated the sclerotic near the tendon of the internal rectus and lodged in the sclerotic slightly outward and downward from the papilla. It was surrounded by a large white circular space, evidently the bare sclerotic, around which the choroid was degenerated. The vitreous was full of floating opacities. V = $\frac{20}{70}$. A marked defect in the centre of the visual field. No irritation in either eye. Observation 2 years.

The *ninth* case is by O. Sigel, 1876 ("On Foreign Bodies in the Posterior Segment of the Eye," *Inaug. Dis. Tübingen*,

and Naegel's *Jahresbericht*, pro. 1876, p. 544). A fragment of a gun-cap was located in the region of the yellow spot. The irritation of the eye ceased in a few days. S $\frac{5}{18}$. Defect of F. near point of fixation. Observed several months, no change.

Tenth case. Dr. Brière, 1877 (*Annal d'Ocul.*, tome 78, p. 42), discovered with the ophthalmoscope a small splinter of steel, fixed at the lower and outer part of the retina, surrounded by a white exudation of 3 or 4 *mm.* in extent three days after it had entered the eye. The patient, feeling no inconvenience and seeing well, did not follow the doctor's instructions to remain in a darkened room and keep the eye as absolutely quiet as possible, but went about his business, until 5 days later an acute attack of severe iridochoroiditis set in which was treated with iced compresses, and subsided in two weeks. With the ophthalmoscope a white mass as large as a pea, the uncapsuled foreign body, was seen at the lower part of the vitreous. Complete recovery. A year later a considerable defect in the upper part of the visual field. S $\frac{20}{60}$.

The *eleventh* case is by S. Snell, of Birmingham, 1878 (*Lond. Ophth. Hosp. Rep.*, vol. ix, p. 370). A small piece of steel entered through the sclerotic, is on retina, near optic disc, lying on the artery and vein, black, "with a little white patch of atrophy upon it." Reads J. 1; sees as well with this eye as with the other.

The *twelfth* and last case is by Hirschberg again, and published in these ARCHIVES, 1880 (vol. ix, Germ. ed., p. 309, Eng. ed., p. 386, etc.). Splinter of iron entered through sclerotic, situated in retina, near od., one end free, projecting 0.6–0.75 *mm.* in vitreous, black, surrounded by a snowy white border of connective tissue, which also partially covers its free surface. Small scotoma. V $\frac{15}{200}$.

To these observations the following by the present writer may be added as the *thirteenth* case:

Chip of iron passed through cornea, iris, lens, and vitreous; one end situated in the retina, the other free in the vitreous; circumscribed scotoma, vision $\frac{20}{30}$. *Eye free from irritation; observed* 10 *weeks.*

Mr. John Tr., æt. 29, machinist, of New York, was hammering a piece of steel March 9, 1882, when a small fragment struck his eye. The vision was clouded at once, and black dots appeared to float before the eye. There was very little pain. The next day he presented himself to me at the dispensary. I found lachrymation, slight circumcorneal injection, a linear opacity of 2 or 3 *mm.* in extent in the lower-outer part of the cornea, about midway between the centre and the periphery; directly behind it the iris tissue swollen, without any perceptible perforation; the pupil narrow; the media turbid, affording only an indistinct view of the fundus. The pupil did not dilate fully by atropia, and the lower-inner part of its edge adhered to the capsule. The lens was somewhat dull in its lower-outer part. Vision impaired; field, tested with the hand, normal. My opinion was that a chip of iron was in the eye, though I could not determine its location. The patient was advised to instil atropia into his eye and remain at home in a darkened room for a few days, if his eye did not become worse.

He did not return until 3 weeks later. The eye was free from irritation, the little corneal scar was distinct, the adhesion of the iris was in the same place; an opaque streak passed through the outer-lower part of the lens, and broadened irregularly at the posterior capsule. The remainder of the lens was clear, the vitreous turbid. When the pupil was kept illuminated and the patient was asked to move the eye in different directions, a bright spark seemed occasionally to flit across the red field. The fundus could be well enough seen to recognize its details. The od. was normal, and so was the remainder of the fundus, with one exception: a short distance below and temporally from the macula lutea there was a black oval spot, surrounded by a bright white band, and showing in its centre a sharp ridge of metallic lustre. Tn. V $\frac{20}{10}$, that of the other eye $\frac{20}{20}$. The diagnosis of the chip of iron in the retina being ascertained, and no irritation being present, the patient was advised to continue the atropia instillations, to be careful, and return in a few days for a perimetric examination. He did not return until six weeks later, when the previous condition was found unchanged, except that the vitreous had cleared up. An examination on the day of the present writing, May 21, '82, ten weeks after the injury, discovered the following condition:

The corneal scar, 3 *mm.* in extent, is well visible; opposite it, in the lower-outer part, the iris tissue is puckered and shows an irregularly depressed scar of 2 or 3 *mm.* in length. A gray streak

runs from this place directly backward through the lens, which appears clear in all its other parts. By ophthalmoscopic illumination, however, the posterior end of the streak is seen to broaden into an irregularly dotted patch, the central limit of which reaches near the posterior pole of the lens.

The vitreous is somewhat diffusely opaque, free from all cords and flakes. The optic disc and background of the eye are normal, with the exception of the seat of the foreign body. In the inverted image the foreign body appears a little above the yellow spot and toward the nose of the patient (see accompanying drawing, fig. 1). It is black, and surrounded by a perfectly white band.

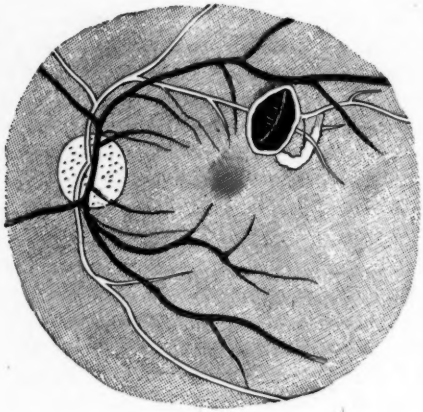


FIG. 1.

Its vertical dimension is almost equal to the diameter of the optic disc, its breadth about ¾ *P*. The surrounding retina appears normal, except that the upper border of the splinter is capped with a small crescentic whitish patch. The choroid near its lower nasal border (always the inverted image) is superficially atrophic in a small area. The retinal vessels are not disturbed by the foreign body; a thicker arterial branch is covered by it, and has no irregularities on either side.

The erect image shows the horizontal blood-vessels distinct with $+\frac{1}{48}$, and the crest of the foreign body with $+\frac{1}{5}$, which indicates a projection of the foreign body over the level of the retina of almost 1 *mm.* The crest of the foreign body appears in the erect image as a sharp line, here and there very lustrous, and

traversed by fine whitish filaments, which are in connection with the white border. The temporal surface of the crest slopes gently down, while the nasal border falls more abruptly. The foreign body is entirely immovable.

Concerning the outward appearance of the eye, I may mention that its size, motion, and tension were normal. S was $\frac{20}{10}$. With $+\frac{1}{24}$ it was $\frac{20}{20}$, with $+\frac{1}{48}+\frac{1}{48}^{c}$ axis 90° (vertical) it was $\frac{20}{20}$. No. 0.3 was read with $+\frac{1}{8}+\frac{1}{48}^{c}$ 90° at 10″ (under atropia).

The field of vision, perimetrically determined, gave a well-marked scotoma, corresponding in location to the ophthalmoscopic picture of the foreign body, but exceeding it in size. The answers of the patient were quite distinct, and repeated examinations showed the same limits. In the horizontal meridian it extended from 9° to 28°, in the vertical from 10° below the horizon to 22° above, on the nasal side of the point of fixation (see fig. 2).

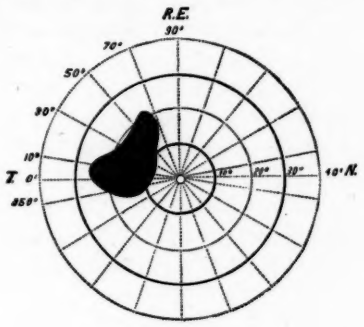


FIG. 2.

Another case occurred at the N. Y. Ophthalmic and Aural Institute during my absence in the summer of 1877. It was under the care of Dr. E. Grüning, and embodied by Dr. E. Fridenberg, at the time House Surgeon to the institute, into his (unpublished) inaugural thesis. The injury was followed by moderate irritation and cataract, which was successfully removed by Dr. Grüning. After the recovery the foreign body was noticed in the retina. Upon inquiry, Dr. Fridenberg was kind enough to write me yesterday, that "the foreign body can still be seen embedded in the retina near the papilla. The aphakial eye sees $\frac{20}{xx}$ with proper glasses. A slight degree of strabismus divergence, but no symptoms of irritation can be seen at present." I hope that Dr. Grüning or Dr. Fridenberg will favor us with a detailed account of this case.

Comprehensive Remarks.

The conditions under which foreign bodies in the background of the eye are tolerated, may be ascertained in two ways: first, by clinical observation; second, by experiment. Leaving, for the present, the way of experiment aside, I will try, by reviewing the clinical material at our disposal, to enumerate the conditions under which foreign bodies have been observed to be tolerated in the background of the eye.

1. *The size of the foreign body did, with one exception, not exceed 2 mm. in its greatest diameter.* In Graefe's first and second cases it was about as long as the diameter of the optic disc and scarcely half so broad. In Jacobson's case the corneal scar was, 1½ hours after the injury, about 1‴ long, the ophthalmoscopic dimensions are not stated—"a small dark body was seen." * * * In Jacobi's case the thickness was 0.75 *mm.*, the length could not be determined, as it was impossible to know how deep it penetrated into the membranes. In Hirschberg's first case the corneal scar, three days after the injury, was, 1‴ long; the body, ophthalmoscopically determined, was about 2 *mm.* long: in his second case it was 2 *mm.* long and 1.5 *mm.* broad. In Strawbridge's case it had the size of a pin-head. In Snell's case it was about 1.25 *mm.* long and 0.75 broad. In Hirschberg's third case it was about 1 *mm.* long and 0.50 *mm.* broad. In our case it was 1.5 *mm.* long and 1 *mm.* broad. The foreign body in Graefe's third case was exceptionally large, "at least 2½‴ long and 1‴ broad. It produced an irregular corneal scar of 1‴ in length, and must have pierced the cornea in the direction of its longest diameter."

2. *The substance of the foreign body was iron or steel in all cases except two:* that of Jacobson, in which a miller, while sharpening a mill-stone, injured his eye by a piece of stone flying off, and that of Brière, in which it was copper, a fragment of a gun-cap.

3. *The parts traversed by the foreign body* were the cornea, iris, and lens in the majority of cases; the sclerotic, ciliary body, and choroid in some; the vitreous, of course, in all.

4. *The reaction of these parts, produced by the traumatism,* was a readily cicatrizing wound in the *cornea* and *sclerotic;*

perforation and cicatrization, with or without transient inflammation, in the *iris;* stationary or progressive opacity in the *lens*, necessitating the subsequent extraction of cataract; diffuse and floating opacities in the *vitreous*, clearing up in most cases, partially remaining permanent in some.

5. The *lesions in the fundus were circumscribed laceration of the retina and choroid*, and hemorrhage; no detachment. In one case (Snell) the retina was intact, the foreign body adhering to its inner surface.

6. The *reaction in the membranes of the fundus was* circumscribed thickening of the retina, circumscribed irregular pigmentation and superficial atrophy of the choroid; in one case (Jacobi) hypertrophy of the choroidal pigment is mentioned, but, to judge from the black appearance of the foreign body in our and other cases, this is not beyond doubt. In all cases there was transient, more or less severe ophthalmitis.

7. The *foreign body was situated* in one case (Snell) on or in the inner layers of the retina; in the majority of cases it penetrated the whole thickness of the retina, in some the retina and choroid; in one it was said to stick in the sclerotic.

8. In most cases *one end of the foreign body projected into the vitreous*, up to 1 *mm.* or less in height; in some its inner surface was at the level of the retina. The inner end was either perfectly free, or incompletely covered with delicate cords of connective tissue, or the whole foreign body was encapsuled (Jacobi, Brière).

9. The *retinal border of the foreign body was surrounded by connective tissue*, which in some cases (Snell, for instance) was very scant; in others (Hirschberg's and ours, for instance) it formed a bright, white, tendon-like ring of characteristic appearance. This ring and the scanty cords arising from it seemed to be the main supports of the foreign body.

10. The *functional disturbances* consisted at first in obscuration of the visual field and impairment of vision, later in a permanent scotoma corresponding in location to the foreign body, but being mostly larger than could be expected from the ophthalmoscopically determined size of the foreign body or the lesion in the retina, because not

only the percipient elements of this spot, but also the nerve fibres passing through it, must have been destroyed. In one case (Snell) a defect in the visual field could not be detected, but, as Hirschberg remarks, it would have been found had the field been perimetrically examined.

The central acuteness of vision was more or less good in all cases; in some (Jacobi, Hirschberg, Snell, Grüning, and ours) it was normal.

As regards the DIAGNOSIS of the presence of such foreign bodies, we must try to detect their place of entrance in the ocular capsule, and carefully, persistently, and repeatedly search for them in the interior of the eye. A bright spark, which during the examination with transmitted light seems to flit across the red field, does not prove that the foreign body is floating in the vitreous. In our case this symptom first attracted my attention, and led me at once to find the location of the foreign body in the retina with the indirect method. We should not be contented with the simple detection of the foreign body, but carefully determine its locality, size, and projection into the vitreous humor. The determination of the central acuteness of sight and the perimetrical examination of the field of vision should, of course, not be omitted.

The PROGNOSIS, in a given recent case, will depend on the size and nature of the foreign body, the location and extent of the lesion made in the ocular capsule, iris, and lens. We should, however, not forget that the tolerance, even if once established, is not illimited, as the foreign body, after any number of years, may become loose and produce irritation, or without becoming loose, may produce repeated attacks of internal inflammation. A number of examples of the former condition is known, and the latter is strikingly illustrated by a case reported by G. Strawbridge (*Trans. Am. Ophth. Soc.*, vol. ii, p. 103), in which an iron splinter had passed through cornea, iris, and lens, and lodged in the sclerotic near the optic disc. "After a severe irido-choroiditis the eyeball remained quiet for three years; then a second attack occurred, lasting a short time, and was followed by a four years' interval of rest.

A third attack, of similar character, and a three years' interval of rest, were succeeded by chronic irido-cyclitis, which, on account of sympathetic irritation in the second eye, rendered the removal of the first necessary. The splinter was firmly embedded in the sclerotic, and the interior of the eyeball filled with the products of the previous inflammatory attacks."

As to TREATMENT, I would, in recent cases, try the removal of the foreign body by curved hooks, forceps, or the magnet only if it could be seen; otherwise I would let the patient quietly lie in bed on his back, use atropia, and bandage both eyes with absorbent cotton and a flannel roller, thus securing the best conditions for the foreign body to sink on the retina, in case it be floating in the vitreous, as well as to fasten itself on or in the retina if once it have reached that membrane.

Pathologically the cases in which a foreign body is tolerated in the background of the eye are of great interest. With one end these bodies are embedded in the membranes, with the other they project free into the vitreous. They enter the eye without any antiseptic precaution, and yet do not cause suppuration. If the tendency of the vitreous for idiopathic inflammation, as H. Pagenstecher and others have shown, is very slight, we might at least expect these extraneous substances to cause inflammation by irritating the retina and choroid.

Extended clinical observation is needed to show how far the cases of tolerance are the rule or the exception, how far the tolerance depends on the size and substance of the foreign body, and how far on the behavior of the patient, or on medical treatment.

Experiments on the reaction or non-reaction of foreign bodies in the eye, such as Th. Leber has instituted, are highly desirable. I would wish, however, that the investigators were not so predominantly governed by the current bacteriological ideas of the day,—the importance of which, as far as it goes, I willingly acknowledge,—but that they might vary the conditions of their experiments chiefly according to the requirements of practice and the principles of general pathology, of which parasitology forms only one chapter.

A FRAGMENT OF STEEL EMBEDDED IN THE CORNEA FOR TWO YEARS WITHOUT CAUSING IRRITATION.

By H. KNAPP.

AS an appendix to the foregoing paper, the following case may serve as an illustration that foreign bodies of moderate size may be tolerated even in the substance of the cornea.

Mr. O. B., æt. 21, of Saxton, N. Y., presented himself at my clinic in June, 1881, and stated that two years previously, while sharpening a millstone, a piece of the hammer flew off and hit the eye. A physician in Germany had tried to get it out, but broke off a piece and left the larger part in. It remained in its place, without changing its position or its appearance, only at times it became cloudy, but never caused pain. During the last three weeks, it seemed to approach the outer surface of the cornea, and then he had pain for the first time. When he presented himself to me, I found a dark, uneven, rough-edged foreign body in the substance of the cornea a little below the centre. Its blunt end was free and slightly raised over the level of the corneal epithelium; its sharper end and middle portion were wedged obliquely into the corneal tissue, the point apparently not far from Descemet's membrane. There was only a minimal layer of gray tissue around it, and some filaments stretched over a part of its free end. It was immovable, caused no pain, either spontaneously or during the movements of the eye and lids, or by pressure upon it. Sight was good, about $\frac{20}{40}$.

I thought that this foreign body of the cornea, although remarkably innocent, had better be out than in, and it was easy to win

the patient over to my opinion. I, therefore, thrust a narrow-bladed knife into the corneal substance, along the foreign body, and split the tissue toward the anterior edge of the splinter, close by, but not coming in contact with, the metal. The foreign body was then seized with a pair of anatomical forceps and easily extracted. It was a black piece of steel, with sharp, uneven edges, and measured 1 by 2 *mm.* No reaction followed the operation. The patient remained at the hospital one day.

EXTENSIVE RAVAGES FROM LUPUS, WITH SUBSEQUENT CICATRIZATION, LEAVING BUT ONE SMALL HOLE IN THE FACE WHICH REPRESENTS BOTH MOUTH AND NOSE, AND WITH COMPLETE CLOSURE OF THE ANTERIOR NASAL ORIFICES.

By JULIAN J. CHISOLM, of Baltimore.

(*With wood-cut.*)

THE accompanying wood-cut, carefully prepared from a recently taken photograph, illustrates the extent to which the frightful ravages of lupus may go without destroying life. The eating away of the nasal cartilages, and even the extension of the ulceration to the cheek, is not a very uncommon occurrence in this form of rodent ulcer. The subsequent cicatrization may reduce the anterior nasal orifices to so small an opening, that a full-sized catheter can only be introduced. However small this opening may contract to, it is still most valuable for breathing purposes, and is especially of comfort during mastication. The following case, taken from the records of the Presbyterian Eye and Ear Charity Hospital, is the only one, in my experience, in which the nasal orifices were altogether obliterated, and in which the scarred condition of the entire face indicates that the ulcerated surfaces were not restricted to nose and cheeks, but were only limited by chin and forehead, and extended from ear to ear.

Her sufferings, while undergoing months of ulceration, and three years of an open ulcer before the healing process was completed, no one can calculate. Fortunately for her,

the last twenty-four years of comparative relief from suffering have somewhat effaced from memory her terrible experience. The wreck of a human face nevertheless remains, and a glance at it depicts, in a language vivid enough to frighten, the horrors through which she has passed. Would that a duplicate case of suffering can never be found! No appreciable cause for the inroads of this formidable disease could be discovered. There was no history of inherited syphilis made out, although such a cause may explain more readily the starting-point of the ulceration.

The following history is given by the patient herself:

Mrs. S., aged 51, a native of Maryland, and an inhabitant of the country, was a healthy girl till 15 years of age, when the disease which has produced such frightful disfigurement made its appearance, as a small ulcer in the roof of her mouth. It gave no special discomfort, and was not painful; but proved rebellious to treatment. At times it would nearly heal up; then again, without known cause, would extend its area. Finally it effected a perforation through the hard palate to the nasal cavity. With this perforation

the disease seemed to become quiescent, and for many years gave but little annoyance. In the meantime the girl developed to womanhood, and at the age of 21 was married. As time advanced she became the mother of eight healthy children.

Four years after marriage the edges of the opening in the roof of the mouth began to ulcerate, and steadily, although slowly, enlarged in all directions. By erosion the entire hard palate was destroyed, and with the disappearance of the roof of the mouth the nasal and buccal cavities became one common excavation. The ulcerative process could not have restricted itself to the palate process alone, as she has lost every tooth from both upper and lower jaw. Active medical treatment was instituted, and was changed from time to time when it proved ineffective: but all to no purpose.

The limits of the mucous membrane of the mouth and nose could not restrain the ulcerative process. From the anterior nasal orifices it crept out on the face, and for some months continued its ravages in spite of treatment, eating away the soft parts of the nose and spreading widely over the cheeks, until the whole face, from ear to ear and from forehead to chin, was one huge ulcer. Her appearance when the disease was at its height must have been fearful to behold, and her suffering intense. How far this destructive process would have extended was hard to foresee. Suddenly, after eight months of steady progress, and while she was still undergoing active internal medication, the disease was arrested. To the surprise of her physicians the ulcerative surfaces began to clear off and cicatrization commenced. The healing process continued without interruption for three long years, when the scarring finally became complete. She had then attained the age of 28. From that time the face has shown no disposition to renew the ulceration; and now, after 23 years, and at the age of 51, she still calls herself a healthy woman.

It was anxiety on account of her eyesight that induced her, at this late day, to leave her country home and seek medical advice in Baltimore.

Accustomed to see all kinds of facial deformities the appearance of this horrible face startled me, when for the first time she took off her veil and exposed it to view. It was a hideous mask, without expression; a blank face deprived of features and incapable of exhibiting any emotion whatever. From the forehead to the chin, or I may say even to the throat, and from ear to ear, there

was one extensive cicatrix of alternate ridges and polished surfaces, having in the centre a small round opening which the little finger could completely plug up. This orifice did the work of mouth and nose, and was the only facial inlet for food and air, so that while eating there could be no breathing. This opening could be puckered to closure by sphincter action. When the interior of the mouth was examined, all the palatine tissues were found absent, and nose with mouth formed one common cavity. There was not a tooth in either jaw. The alveolar processes had shrunk away in atrophy. There was no free movement to the jaws on account of the many cicatricial ridges over the cheeks and sides of the face, and possibly in the buccal cavity, into which the finger could not be sufficiently introduced for examination; yet to a certain extent she could gum her food. For 23 years she has nourished herself through this small facial aperture, even during the child-bearing period, and she is by no means an emaciated person. Her regular weight has been sustained at about 115 pounds. Even now, after so long an interval, the cicatricial skin is drawn tightly over her face, sharply outlining the contour of the shrunken lower jaw. There is no vestige of the anterior nasal orifices; a smooth cicatrix has completely stopped up the nasal outlet.

All the available skin left on the face, which the ulcerative process had not destroyed, had been required to aid in the completion of the cicatrization. On the right side the upper eyelid is effaced amidst frontal scars, and the lower lid is spread out over the cheek; the line representing its ciliary border, deprived of lashes, is midway between the eye and the mouth. From long exposure and having no protection, the right cornea has lost all transparency, and is covered with a much-thickened horny epithelium, through which the iris is not visible. From this eye the lachrymal tubes are all closed, and no trace of a secretion of tears exists. There is no cul-de-sac for either right eyelid, a continuous surface without a crease extending from forehead to cheek across the eye-surface of thickened cornea. Notwithstanding 23 years' exposure of this mucous membrane as cuticle, it is still smooth, polished, and soft, indicating both to the eye and to the touch a finer structure than the surrounding skin, so that with closed eyes the finger of the examiner could easily detect the cutaneous from the mucous surface.

On the left side, although the lower lid was absorbed in the

covering of the cheek, there is a thickened fold of skin at the outer and upper portion of the orbit, under which the left eyeball can be rolled for safety, and can be partially concealed. The upper two-thirds of this cornea have remained transparent, and give her the sight which she enjoys. There is no visible lachrymal secretion on this left side either, and the nasal duct is quite obliterated as far as any visible opening upon the lids is concerned, yet there must be some moisture about the eye to keep the cornea clear. It is the fear that this, her only useful eye, is in jeopardy, and that blindness is to be added to her other trials, that has brought her to the city for consultation.

Conservative surgery promises much for this face ; if not to remove deformities at least to increase her comforts and to protect her from threatened troubles. The oral orifice can easily be enlarged to facilitate the taking of food, and a nasal opening can be established through which she can carry on respiration while the mouth is closed for retaining food in the buccal cavity. There is also good ground for believing that the lids may be replaced in their normal relations to the eyeballs, and that the exposed surfaces, occasioned by this removal, can be covered by skin-grafting. These various operations would protect the eye, facilitate breathing, and also the taking of food. They have been explained to her, and she has them under advisement.

AN OBSCURE CASE IN NERVE PATHOLOGY ACCOMPANYING OPTIC NEURITIS.

By JULIAN J. CHISOLM, M.D., of Baltimore, Md.

I WOULD gladly know, from those more skilled in the pathology of the nervous system, the nature of a central lesion which gave, as its first appreciable symptom, in a previously healthy adult, pain in the movements of the left eyeball, with slight clouding of vision, and which progressed with such rapidity as to destroy sight in the eye within 24 hours. Then similar pains making their appearance in the right-eye movements, with subsequent blindness in it also. By the morning of the third day not even the appreciation of light was left to the patient, who, otherwise, felt perfectly well. Now commenced a new train of symptoms from the other extremity of the body, viz: interference with locomotion, with loss of sensation in the feet. A paraplegia developed, advancing steadily and rapidly up the spinal cord, affecting, progressively, feet, legs, thighs, pelvis, abdomen, and thorax. This destroyed life in 12 days from the commencement of the eye symptoms, the brain remaining clear to within a few hours of death. Loss of sight first, and afterward loss of power in the lower extremities. The following report of the case, recently under my care, supposed at first to be an eye disease only, will explain the symptoms as they occurred, *seriatim*, from the incipiency to the fatal termination.

Mr. J., of North Carolina, aged 28, of fine physical development, consulted me for a very recent loss of sight. His previous history was that of good health, except chills, which he had had during the fall season. He lived on a farm which he cultivated,

while at the same time he attended to mercantile pursuits in a neighboring town. In getting up one morning he complained to his wife that the movements of the left eye caused pain, and upon going out upon his portico, after breakfast, to view his fields, he noticed that the vision in this eye was a little foggy. This did not, however, interfere with his attending to the farm duties. During the day the pain in the eye caused him much uneasiness, especially as he found that the sight was hourly becoming more dim, so that by night-time he was quite blind in the left eye. His eyes had never given him trouble before, and he had always considered his sight perfect. The following morning, after a restless, anxious night, he found that he could not perceive even light with his left eye, and that the right eye had also become painful in its movements, as had the left on the preceding day. Sight soon began to fail in this eye also, and by the morning of the third day he had lost sight altogether in both eyes. He determined to seek professional advice without loss of time, and, accompanied by a male relative, he left home for Baltimore, a distance of 300 miles by steamboat navigation, the only means of communication with his isolated home.

I saw him on the morning of the 4th day from the commencement of the attack. He had no appreciation of light in either eye, but had no special pain. The eyes were not injected. The pupils were large and brilliant, with the vacant stare so characteristic of nerve blindness. Ophthalmoscopic examination showed choked discs with very woolly outlines, but no other intraocular disturbance. He had no pains in the temple, nor headache, although the movement of the eyeballs still caused discomfort. In walking from his carriage into my office I noticed that his gait was not steady, and upon being questioned closely he admitted of some difficulty, which he had first observed on the steamboat, and which he had attributed to want of confidence in being led about in his blind condition. The choked discs, with clear media and normal tension, evidently referred to some postocular, probably intracranial trouble. I had him freely leeched, and ordered iod. pot., gr. x, with bichlor. hydrarg., $\frac{1}{16}$, every five hours. His bowels had been freely acted upon, on which account a purgative was not indicated. He had not passed his urine since early morning, and complained of a feeling of fulness, with an inability to relieve himself. The urine was drawn off by catheter.

When I visited him the next morning I found no improvement

in his symptoms. He complained of loss of feeling in his feet, with inability to move them. Tickling the soles of the feet caused no sensation, although the toes moved in response to the irritation. The bladder had been emptied at regular intervals by catheter.

On the morning of the 3d day of my treatment, the 7th of his disease, the loss of sensation in the lower extremities had extended to the hips. Titillation of the soles of the feet elicited no expression in reflex movements. The temperature as well as the color of the skin of the extremities was normal, showing no interference with the circulation. He was free of all pain. His mind was clear. He conversed freely about his case and dictated business letters. He had slept tolerably well. His pulse was 120. Respiration normal. Temperature 101°, being the same as on the day of his arrival in Baltimore. In his previous symptoms there was no change for the better. Sight still absent, and the same inability to empty his bladder. He had had no further action from his bowels, but as he had not taken much food and felt no abdominal discomfort, no purgative was given. The iod. pot. and mercury treatment was continued.

On the morning of the 4th day the anæsthesia had crept upward to a level with the umbilicus. As he expressed himself, he felt the dead feeling slowly encroaching upward, and wanted to know whether he should not look for a fatal result. When told that his chances for recovery were very slim, he telegraphed at once for his wife to come as speedily as possible to his bedside. He could not now feel the introduction of the catheter in emptying his bladder. The line between full sensation and the total loss of feeling on the abdominal surface was sharply defined on either side of the trunk, and was traced out with a nitrate of silver point. His pulse remained at 120. Respiration 25, and temperature 99°.

By the morning of the 5th day the anæsthetic line was on a level with the 6th rib. During the night his anal sphincter had given way, with involuntary discharges of a very offensive, watery nature. He sleeps most of the time, and yet when aroused his brain is so clear that in his waking moments he makes all business arrangements looking toward his death. He explains clearly his symptoms, finds that his breathing is becoming more shallow, but complains of no pain. During the night he has sweated much, and his skin is still quite moist.

On the morning of the 6th day the anæsthetic line had extended two inches higher upon his chest, otherwise no change from the day before. Bowels still continuing to discharge involuntarily an offensive fluid. His bladder is emptied by catheter every 5 hours, and nothing abnormal was found in the urine. There is no appearance of cerebral disturbance, although he sleeps most of the time. Skin still very moist.

On the morning of the 7th day the sensation was lost on a line two inches above the nipple, and equally on both sides of the trunk. The daily encroachment of the loss of sensation has been steady from the very beginning. Starting from the extremity of the spinal cord, its progress could be traced as each additional spinal nerve was invaded in the upward progress of the disease, until now the entire abdominal and thoracic walls are motionless and insensible. Respiration is labored and chiefly from the diaphragm. The temperature to-day is 98°. Pulse 120. Bowels still discharging offensive liquids. Urine clear, with no trace of albumen. It is drawn off every 5 hours as heretofore. Skin sweating. Answers questions rationally when roused, and gives instructions as to his business affairs during his waking moments.

At 4:30 A.M. on the morning of the 8th day since his arrival in Baltimore, and 12 days from the commencement of his first symptoms of painful movements of the left eyeball, he could not be roused. He remained in this comatose condition 3 hours, till 7 o'clock, A.M., when he died.

His wife arrived two hours after he ceased to breathe. She positively refused to permit an autopsy, and therefore the true cause of this singular fatal malady could not be determined. Were it not for the ophthalmic symptoms, as the initiatory movement of the fatal chain, it would seem as if a rapid spinal effusion, or a hemorrhage within the spinal sheath, had gradually filled up the serous cavities, and by pressure choked off all spinal nerve action, commencing from the most dependent part of the cord, and slowly advancing till it reached the nerve centre for all vital action. But how shall we explain the initiatory blindness, with absence of cerebral symptoms, preceding by three days the trouble in the lower extremities and bladder?

SYSTEMATIC REPORT ON THE PROGRESS OF OPHTHALMOLOGY DURING THE FOURTH QUARTER OF THE YEAR 1881.

By H. MAGNUS, Breslau; C. HORSTMANN, Berlin; and A. NIEDEN, Bochum.

WITH THE COÖPERATION OF

E. Nettleship, London; C. E. Fitzgerald, Dublin; E. Marckwort and P. von Mittelstädt, Antwerp; Dantone, Rome; van der Laan, Lisbon; Hirschmann, Charkow; S. M. Burnett, Washington; Ole Bull and Schiötz, Christiania.

Translated by Dr. F. E. D'Oench, New York.

A.—GENERAL OPHTHALMOLOGICAL LITERATURE; GENERAL PATHOLOGY, DIAGNOSIS, AND THERAPEUTICS; NORMAL ANATOMY AND PHYSIOLOGY.

By H. MAGNUS, M.D.

I.—GENERAL OPHTHALMOLOGICAL LITERATURE.

a.—TEXT-BOOKS, MONOGRAPHS, TREATISES ON GENERAL, BIBLIOGRAPHICAL, AND HISTORICAL SUBJECTS.

941. Carreras-Aragó. Annual report of the ophthalmological literature of Spain, 1881, vol. i, *C. f. A.*, Nov. 1. Remarks on cauterizing with fire. 2. Amaurosis due to injuries in the peri-orbital region. 3. An interesting case of amaurosis due to hysteria. 4. Pilocarpine in diseases of the eye. 5. Treatment of conical transparent staphyloma of the cornea. 6. Corneal ulcer from infection. 7. Lesion of the cornea, with traumatic cataract and a fragment of gun-cap in the lens; extraction of the foreign body and the lens; recovery. 8. Monograph on diseases of the lachrymal apparatus.

942. Dobrowolsky. Ophthalmologisch-klinische Beobachtungen. *Wöchentl. klin. Zeitung*, 1881, Nos. 13 and 14. 1. Uræmic amaurosis in a girl of 10 years. 2. Sympathetic glaucoma. 3. Monolateral, inveterate, conver-

gent squint without amblyopia ex anopsia. 4. Neuro-retinitis due to pressure by a tumor of the lachrymal gland. 5. Diffuse retinitis in a case of a high degree of hypermetropia. 6. Injury of the conjunctiva by caustic potash; the totally opaque cornea cleared up again.

943. DONDERS, HESS, HOMER, ZEHENDER. Bericht über die dreizehnte Vers. d. ophth. Ges. zu Heidelberg, 1881; Rostock, 1881.

944. GALLERAUD. Des lésions traumatiques du globe de l' œil chez les travailleurs. *Thèse de Lyon*, 1881.

945. GAYET, HOCQUARD, et MASSON. Iconographie photographique appliquée à l' ophthalmologie. *Lyon Méd.*, 1881, Oct. 23.

946. JAVAL. Eclairage électrique au point de vue de l' hygiène de la vue. Soc. de Méd. Publ. de l' Hygiène Professionelle. Séance du 26 Oct., 1881. *Progr. Méd.*, No. 51. Javal hopes that the use of the electric light may become universal. If the necessary precautions are observed, especially in the use of goggles, the eye is not endangered. In place of blue or gray goggles, Fieusal recommends yellow ones, as they absorb the violet rays more completely. Mesnil argues against the electric light.

947. GIRARD. Les petits photophobiques. *Rev. trim. d' Ophth. Prat.*, Oct., 1881.

948. LONGSPÉRIER. Un cachet d' oculiste. *Gaz. hebd.*, 1881, Oct. 14.

949. MACÉ et NICATI. Recherches sur la comparaison photometrique des diverses parties d' un même spectre. *Annales de Chimie et de Physique*, 1881, vol. xxiv, 5th series.

950. MICHEL. Annual report on the progress of ophthalmology, founded by Dr. Nagel, vol. x. Report for the year 1879. Tübingen, 1881.

951. NARKIEWICZ-JODKO. Annual report of the ophthalmological literature of Poland for 1881. *C. f. A.*, Dec. 1. Przybylski. Observations on diphtheritic conjunctivitis and the connection of this disease with diphtheria and croup in general. 2. Machek. Retinitis pigmentosa. 3. Wicherkiewicz. Traumatic or syphilitic iridocyclitis. 4. Szokalski. The consequences of irritation of the optic nerve. 5. Rydel. Examination of the eye and its functions for the purpose of investigating its diseases. 6. Rymarkiewicz. Cases of vitia primæ conformationis oculi. 7. Kramsztyk. On neuroparalytic keratitis. 8. Jany. Cases of sarcoma of the choroid. 9. Gepner. Tenth annual report of the ophthalmological institute at Warsaw for 1880. 10. Kramsztyk. A foreign body in the orbit. 11. Talko. Injuries to the eye in recruits. 12. Mikucki. Eserine in keratitis. 13. Kramsztyk. The removal of metallic deposits from the cornea. 14. Kramsztyk. Pustular conjunctivitis. 15. Narkiewicz-Jodko. Cases of injury to the eye. 16. Talko. Ophthalmology at the third congress of the Polish physicians and naturalists at Cracow.

952. REICH. Israelites and military service. *Med. Zeitung*, No. 9. In 15 cases, all of them Israelites, a traumatic cataract had been intentionally produced, in order to escape military service. HIRSCHMANN.

953. SIMI. Associazione ottalmologica Italiana, iv. Riunione, Roma. *Boll. d' Ocul.*, vol. iv, No. 2, 1881, Oct.

954. SORMANNI. Cecità completa ad incompleta. *Geografia nosologica*

dell' Italia, Roma, 1801. The average of recruits blind on one or both eyes during the last 14 years was 7.5%; Sicily furnished 9%. DANTONE.

955. TALKO. Injuries to the eye in recruits. *Gaz. lek.*, 1881, No. 7; Report in *C. f. A.*, 1881, p. 386. Among 235 simulants resp. persons suspected of self-injury, there were, in the year 1880, 16 with injuries of the eye produced intentionally. Injuries of the cornea are the most frequent—cauterization with powerful substances, or bites of leeches in the cornea. Injuries of the lens were also observed. See Reich, 952, this bibl.

956. TALKO. Ophthalmology at the third congress of Polish physicians and naturalists at Cracow. *Gaz. lek.*, 1881; Rep. in *C. f. A.*, p. 387. 1. The retinal changes visible with the ophthalmoscope in rabbits poisoned with bacillus anthracis. 2. Symptomatology and etiology of enophthalmia. 3. Case of anophthalmia.

957. WEBER. Examination of the eyes in the higher schools of Darmstadt. Appendix to the medical report of the grandducal ministerial department for the years 1877–80. Darmstadt, 1881. The author treats the subject very thoroughly, and comes to the following conclusions: 1. In view of the injurious results of poor illumination, the windows, where skylights cannot be introduced, should not extend lower down than the height of the scholars when standing upright; where there are windows already, they should be provided with ground glass up to this height, on the south and west sides in their entire extent; rooms for drawing and female handiwork should be lighted from above. In view of other demands connected with the question of illumination, a revision of the laws governing the building of schools, based on the principles of hygiene now established, is urgently advised. 2. In view of the attributes of a good school-bench set forth, the introduction of Lickroth's school-bench, with a top 50 *cm.* broad, is to be ordered; for drawing and female handiwork they should be replaced by other apparatus. 3. In view of the different size of the scholars of the same class, they should receive seats corresponding to their height, as determined at the beginning of each term. 4. In view of the necessity of sufficient ventilation, and the injurious influence of long-continued sitting, and its insufficient neutralization by play, as proved by statistics, instruction should be limited to three quarters of an hour at a time, and the remaining fifteen minutes be devoted to gymnastic exercises, drilling, etc. 5. In view of the injurious influence of poor carriage of the body, the teachers are instructed to see that the distance between eye and work is at least 35 *cm.*, and that there is always the necessary amount of light, to be determined by appropriate trial-plates. 6. In view of the injurious influence of poor material, all printed matter not in accordance with the principles established in respect to it should be discarded, also checkered blank-books, plates, models for drawing, printed charts, and too fine needlework. 7. In view of the injurious influence of sewing of all kinds on children not at least ten years old, and in view of the necessity of stricter mental occupation at this age, a complete reform of this instruction is demanded. 8. In view of its mentally as well as physically injurious influence, the present system of penmanship should be replaced by a round-hand form. 9. In view of the unprofitableness of dictation, it should be forbidden from principle, and only allowed for the shortest notes. 10. In view of the necessity of constant medical control over the hygienic postulates of the school,

a member of the supreme medical board is to be provided with sufficient administrative and executive authority, or a special physician to be commissioned for that purpose.

958. WOLFE. On diseases and injuries of the eye. A course of systematic and clinical lectures to students and medical practitioners. With ten colored plates and 157 wood engravings. London, 1882, Churchill. The ophthalmoscopic part by Magnus.

b.—STATISTICAL PAPERS.

959. Aerztlicher Bericht des K. K. allg. Krankenhauses zu Wien vom Jahre 1880. Diseases of the eye, p. 66-76.

960. Bericht der K. K. Krankenanstalt Rudolph-Stiftung in Wien vom Jahre 1880. Diseases of the eye. p. 163-176. 5 cases of glaucoma treated by iridectomy; 13 cases of senile cataract operated by linear extraction: 11 successful, 2 failures.

961. DESPAGNET. Clinique ophthalmologique du Dr. Galezowski, Relevé statistique des maladies soignées et des opérations pratiquées du 1. Juillet, 1880, au 1. Juillet, 1881. *Rec. d' Ophth.*, Oct., Nov., Déc., continued. Vide No. 458 this bibl. Carbolic-acid spray 1% is highly recommended for blennorrhoic conjunctivitis.

962. GEPNER. Tenth annual report of the ophthalmic institute of Warsaw for the year 1880. *Gaz. lek.*, 1881. Report in *C. f. A.*, p. 385. 4,292 patients were treated and 322 operations performed. Peripheric linear extractions were performed in 86 cases of senile cataract: in 78 cases V$>\frac{3}{10}$, in 3 less or equal to $\frac{3}{10}$, 2 were failures; 66 iridectomies, 19 of them for glaucoma.

963. HERZENSTEIN. Examination of the scholars of the military school at Orel. *Wojinno-sanitar*, Dec., 1881, No. 11. 443 scholars were examined; 39.3% had myopia. In the lowest class the percentage of myopia was 16.3, in the highest 51.2. V=1 in 46.7%; V>1 in 24.8%; V<1 in 28.5% (without correcting-glasses). HIRSCHMANN.

964. Manhattan Eye and Ear Hospital. Twelfth annual report, New York, 1881. From Oct. 15, 1880, to Oct. 15, 1881, 2,819 patients were treated: 15 extractions; 40 tenotomies; 18 iridectomies.

965. REICH. The visual power of Russian scholars. An oculistic study. *Wratschebnija Wetomosti*, No. 44 and reprint. Reich compiles the result gained from 8,500 cases, boys and girls, examined by himself and others. In all the schools often V>1 and even greater than 1½, the number varying between 15% and 64%. In the schools of Tiflis, examined by Reich himself, 33% had V equal to or greater than 1½. The average power of vision in the schools he estimates at 1½. In the higher classes the proportion is less favorable, and the number of scholars with V>1 is less. In two schools of Tiflis, for instance, the percentage falls from 31% to 15%, and from 41% to 10%. In schools for girls this difference is smaller. V<1 was more frequent among girls than boys. In the lowest classes the percentage was 13-15 for the boys and 17-18 for the girls. In the higher classes V<1 in at least 20%. HIRSCHMANN.

966. ROSMINNI. Rendiconto clinico dell' instituto oftalmico di Milano per il quinquennio 1874-1878. *Gaz. Med. Ital. Lombardia*, No. 48 and 49, Dec., 1881. Continued. Vide No. 30, this bibl.

967. STEFFAN. Nineteenth annual report of the ophthalmic institute of Dr. Steffan at Francfort o. M. Francfort, 1881. 4.953 patients were treated during the year. 21 senile cataracts were operated upon by peripheric extraction with a flat flap-section, all of them successfully; 13 iridectomies; 19 operations on the muscles.

968. STOER. Comprehensive report of eye patients treated in the year 1880. Ratisbon, 1881. 1,239 patients; 12 extractions; 30 iridectomies; 4 squint operations.

c.—OPHTHALMOLOGICAL JOURNALS.

German Journals.

969. *v. Graefe's Archiv für Ophthalmologie*, Berlin, 1881, Bd. xxvii, 3. 1. Kuhnt. Colored induction of light. 2. Fuchs. An entoptic phenomenon observed in certain movements of the eyes. 3. v. Hippel. Monolateral color-blindness. 4. Königstein. Notes on histology: *a.* the nerves of the sclera; *b.* on the pupillary membrane. 5. Fuchs. The opacity of the cornea in glaucoma. 6. Hänsell. Preliminary communication of experiments in vaccinating syphilis upon the iris and cornea of the rabbit. 7. Mandelstamm. A case of sarcomatous ectropium, with some notes upon trachoma. 8. Rieger and v. Forster. The eye and spinal cord. 9. Osterwald. A new case of leucæmia with bilateral exophthalmus, due to tumors of the orbit. 10. Vossius. The growth and physiological regeneration of the epithelium of the cornea. 11. Baumgarten. Reply to Mr. J. Michel.

970. *Archiv für Augenheilkunde.* Herausg. von Knapp u. Schweigger. Bd. xi, 1. Issued Oct. 30, 1881. 1. Pflüger. Further observations on color-blind persons. 2. Wiethe. A case of congenital deformity of the optic disc. 3. Adamück. Some observations on tumors of the eye. 4. Bettman. Examination of the eyes in two fatal cases of anæmia. 5. Knapp. Report of a seventh hundred of cataract-extractions. 6. Browning. A binocular ophthalmotrope. 7. Knapp. Report on the ophthalmological section of the London International Medical Congress, Aug. 3-9, 1881. 8. Knapp. Report on the ophthalmological congress held at Heidelberg, Sept. 14 and 15, 1881. 9. Kaiser. The association of words with colors. 10. Magnus, Horstmann, Nieden. Systematic report on the progress of ophthalmology during the months of July, August, and September, 1881.

971. *Klinische Monatsblatter für Augenheilkunde.* Zehender, Bd. xix, *Oct.* 1. Landesberg. On optico-ciliary neurotomy. 2. Schiess-Gemuseus. Traumatic myopia, gradual spontaneous recovery. 3. Schiess-Gemuseus. Long-continued formation of vesicles on the cornea after inflammation of the other eye. 4. v. Forster. On albinism. 5. Bibliography.—*November.* 1. Schweigger. The use of strychnine, and remarks on visual troubles due to hysteria. 2. Vossius. The treatment of diphtheritic conjunctivitis. 3. Skrebitzky. Case of anophthalmus with congenital cysts in the lower lids. 4. Bibliography.—*December.* 1. Emmert. The relative size of after-images, with remarks by

Zehender appended. 2. Schaefer. A case of congenital monolateral zonular cataract. 3. Schiess-Gemuseus. Two cases of extraction of foreign bodies with the electro-magnet. 4. Bibliography.

972. *Centralblatt für praktische Augenheilkunde*, Hirschberg, *October*. 1. Horstmann. Recurrent iritis. 2. Reports of societies, Internat. Med. Congr. Abstract of the communications to be made in section ix: Ophthalmology. 3. Bibliography.—*November*. 1. Schubert. Cases of retinitis syphilitica. 2. Purtscher. A case of erythropsia after traumatic cataract. 3. Schenkl. Congenital defective development of the levator palp. sup., rect. ext., rect. int., rect. sup., and obl. inferior in both eyes. 4. Alexander. Extraction of a piece of iron from the vitreous body by the electro-magnet. 5. Carreras-Aragó. Annual report of the ophthalmological literature of Spain, 1881. Vol. i. 6. Reports of societies. Intern. Med. Congr. Abstract of ophthalmology (continued). 7. Bibliography.—*December*. 1. Hosch. Primary sarcoma of the iris. 2. Hosch. A case of gumma of the ciliary body. 3. Kolbe. The most practical methods for examining the color-sense of large numbers of people. 4. Cohn. New methods for testing the color-perception by pseudo-isochromatic plates. 5. Narkiewizc-Jodko. The ophthalmological literature of Poland for 1881. 6. Society reports. Intern. Med. Congr. Abstract of ophthalmology (continued). 7. Bibliography.

French Journals.

973. *Revue clinique d' oculistique du Sud-Ouest.* Armaignac. Sichel. Meyer. No. 13. *October*, 1881. 1. Armaignac. Considérations sur l' étiologie et la thérapeutique des affections des voies lacrymales (suite). 2. Armaignac. Cécité temporaire presque complète survenue subitement chez un jeune homme à la suite d' un travail intellectuel éxagéré. Guérison complète. 3. Armaignac. Kyste séreux de l' angle externe de l' œil gauche. Exstirpation. Guérison. 4. Poncet. Congrès international de Londres, août, 1881; section d' ophthalmologie (fin).—No. 14. *November*, 1881. 1. Armaignac. Considérations sur l'étiologie et la thérapeutique des affections des voies lacrymales (suite). 2. Armaignac. Des applications de la greffe dermique à la blepharoplastie: épithéliome de l' angle interne de l' œil. Ablation. Greffe dermique. Guérison. 3. Meyer. Ectropion cicatriciel. Greffe hétéroplastique. Guérison. 4. Caudron. Observations recueillies. 5. Berger. Ectropion considérable de la paupière inférieure. Greffe par transplantation d'un lambeau taillé dans la peau du dos combinée avec la blepharoplastie.—No. 15. *December*, 1881. 1. Armaignac. Considérations sur l'étiologie et la thérapeutique des affections des voies lacrymales (fin). 2. Secondi. Quatre cas de guérison radicale et persistante de décollement de la rétine par le traitement chirurgical.

974. *Archives d' Ophthalmologie.* Panas. Landolt. Poncet. No. 6. *September, October*, 1881. 1. Hocquard. Plaques épithéliales de la cornée. 2. Damalix. Du traitement des affections chroniques de la cornée par le massage de l' œil. 3. Delapersonne. Du chancre palpebral. 4. Macé et Nicati. Contribution à l'étude du champ visuel des couleurs. 5. Poncet. Congrès international de Londres. 6. Thomas. Revue bibliographique.

975. *Recueil d' Ophthalmologie.* Galezowsky. Cuignet. No. 10. *October*, 1881. 1. Despagnet. Clinique ophthalm. du Dr. Galezowski. Relevé sta-

tistique des maladies soignées et des opérations pratiquées du 1. Juillet, 1880, au 1. Juillet, 1881 (suite). 2. Cuignet. De la conjonctivite chronique simple (fin). 3. Than. Clinique ophthalmologique du Dr. Dehenne. 4. Hirschberg. Embolie puerpérale. 5. Galezowski. Congrès médicale de Londres. 6. Parent. Bibliographie.—No. 11. *November*, 1881. 1. Despagnet. Clinique ophthalm. du Dr. Galezowski. Relevé statistique des maladies soignées et des opérations pratiquées du 1. Juillet, 1880 au 1. Juillet, 1881 (suite). 2. Knies. Ophthalmie sympathique. 3. Dufour. De l' action de l' iridectomie dans l' hydrophthalmie. 4. Rodet. La Cécité en Espagne. 5. Galezowski. Congrès de Londres. 6. Boggs. Bibliographie étrangère. 7. Chevallier. Bibliographie française.

976. *Annales d' Oculistique.* Warlomont. *September-October*, 1881. 1. Donders. Sur les systèmes chromatiques. 2. Van Duyse. Le colobome de l' œil et le kyste sereux congénital de l'orbite. 3. Gayet. Hocquard. Masson. Iconographie photographique appliquée à l'ophthalmologie.—*November-December*, 1881. 1. Donders. Sur les systèmes chromatiques. 2. Parinaud. Des troubles visuels qui diminuent l' aptitude à reconnaître les signaux colorés. Exposé d' un nouveau mode d' examen. 3. Loiseau. Repertoire bibliographique.

English Journals.

977. *The Ophthalmic Review*, a monthly record of ophthalmic science. Grossman. Smith. *November*, 1881. 1. Hutchinson. On retinitis pigmentosa and heredity. 2. Ophthalmological Society of Great Britain, Oct. 13. 3. Jackson. Apparent movements of objects during involuntary movements of the eyes. 4. Adams. Uniocular diplopia. 5. Ord. Uniocular diplopia. 6. Adams. Suppurative ophthalmitis. 7. Brailey. Tubercular disease of the iris. 8. Walter Edmunds. Perineuritis optica. 9. Sympson. Tubercle of cerebellum, with double optic neuritis.—*December*, 1881. 1. Critchett. Practical remarks on cataract. 2. Hutchinson. On retinitis pigmentosa and heredity. 3. Priestley Smith. Retinitis-pigmentosa connected with a history of maternal shock.

Spanish Journals.

978. *La crónica oftalmológica.* Del Toro. *October.* Del Toro. Intoxicacion par la pilocarpina.—*November-December.* Lopez Ocaña. El parasitismo en oftalmologia.

979. *Revista especial de oftalmológia, sifilografia, dermatologia, y affeciones urinarias.* Rodriguez Viforcos. *October.* Perez Cabelleros. La oftalmometrologia, sus procedimentos y applicaciones.

In the last numbers of the year there are no original ophthalmological papers.

980. *Revista de ciencias médicas.* Carreras-Aragó. *October.* 1. Carreras-Aragó. El Daltonismo y los alteraciones visuales en los empleados de los ferrocarriles. Continned from No. 6 u. 7. 2. Lopez-Ocaña. Un tercer caso de pseudo-hemorrhagia in ocular.—*November.* 1. Montardit. Jeringa para ingeniones en las vias lagrimales. 2. Carreras-Aragó. El Daltonismo y los alteraciones visuales en los marinos de guerra y mercantes.

981. *Anales de la Sociedad Española de Hidrologia Médica.* Madrid. *November*, 1881. Garcia Lopez. Paralisis general con ceguera completa, curada con las aguas minerales de Ledesma.

982. *Boletin de medicina naval. November*, 1881. Ruiz Sanroman. Estudios sobre el Daltonismo aplicado a la navegacion.

983. *La clinica. November*, 1881. Montero. Caso notable de glaucoma agudo.

984. *Revista de medicina y cirurgica prácticas. November*, 1881. Armangué. Opacidad de la córnea curada con un colirio de amoniaco liquido.

985. *Los avisos. November*, 1881. Gastaldo. Blefaritis ciliar, Blefaroadenitis, su filosofia y su tratamiento.

986. *El siglo Médico. October*, 1881. Osio. Congresso médico internacional de Londres. Oftalmologia.

Italian Journals.

987. *Bolletino d'Oculistica.* Anno iv. No. 2. Simi. Associazione ottalmologica italiana. iv. Riunione; Roma.—*November*, 1881, No. 3. 1. Secondi. Lettera casi di guarigione permanente del distacco retinico. 2. Simi. Glaucoma.—*December*, 1881. Letter of Dr. Maréchal to Simi, in regard to an apparatus for determining color-perception.

The *Annali d'Ottalmologia*, Fasc. 6, did not appear during the last quarter of the year 1881.

II.—GENERAL PATHOLOGY, DIAGNOSIS, AND THERAPEUTICS.

988. ALEXANDER. Extraction of a chip of iron from the vitreous with the electro-magnet. *C. f. A.*, Nov. Good result. The position of the piece of iron in the eye could not be determined by means of a magnetic needle as described by Pooley.

989. BADAL. L' élongation des nerfs et ses applications au traitement des nevralgies du trijumeau. *Gaz. hebd. des. Sc. Méd.* de Bordeaux, Dec., 1881.

990. BAJARDI. Dell' adenite scrofulosa in rapporte con alcune affectioni oculari. *Gaz. degli Ospitali*, vol. ii, No. 20, Oct., 1881. Report of three cases.

991. BECKER. The development of sympathetic ophthalmia. Sixth meeting of the neurologists and alienists of Southwestern Germany, at Baden-Baden, May 21 and 22, 1881. *Archiv für Psychtatrie*, Bd. xii, 1, p. 250. The transfer probably takes place through the nerve-centres of the blood-vessels from one uvea to the other.

992. BERLIN. The analogy between so-called commotio retinæ and concussion of the brain. *The same journal*, p. 253.

993. BRAILEY. On the pathology of sympathetic ophthalmitis. *Trans. of the Intern. Med. Congr.* London, viii.

994. CHODIN. Course of operations on the eye. With 85 illustrations in the text and 4 plates. St. Petersburg, 1881. Complete text-book of operative ophthalmology, based upon the latest results and investigations.

995. DELSOL. De la cautérisation ignée dans quelques affections de la cornée. *Thèse de Paris*, 1881.

996. DEL TORO. Remarks on cauterizing with fire. Report in *C. f. A.*, p. 339. It is called for in scrofulous pustules and in acute and chronic ulcers of the cornea; also in lachrymal fistulas.

997. DUFOUR. Transplantation des muqueses sur l 'œil. *Transac. of the Intern. Med. Congr.*, London, viii. *Rev. Méd. de la Suisse Rom.*, 1881, No. 10, Oct. 15. The human conjunctiva may be replaced by that of the rabbit, also by other mucous membranes. There must be no bleeding of the spot upon which the mucous membrane is transplanted. Great care must be taken in applying the sutures; it is best to insert them into the patch before transplanting it. Dufour did not observe any shrinkage of the transplanted piece of mucous membrane. It is not advisable to use salicylic acid during or after the operation.

998. FÖRSTER. Some improvements in the operation for senile cataract. Schlesische Gesellsch. f. vaterländische Cultur, Oct. 18, 1881. *Breslauer ärztl. Zeitschr.*, 1881, No. 24, and Rep. of the 13th meeting of the Ophth. Soc. at Heidelberg. When the cataract ripens slowly, a squint-hook, after previously making an iridectomy, should be passed over the cornea several times, pressing and rubbing upon it; the corticalis, being not yet entirely opaque, is thus broken up within the capsule. The capsule should not be opened with the cystotome, but with a fine forceps, as in this way the greater part of the anterior half of the capsule may be removed from the eye, thus diminishing the danger of subacute iritis or iridocyclitis. Carbolic acid for disinfecting the eye or the instruments should be discarded. The instruments, however, should be disinfected in absolute alcohol before the operation. Not much weight is attached to disinfecting bandages.

999. VON FORSTER. On albinism. *Klin. Monatsbl. f. Augenh.*, Oct. Good color-perception; disc gray.

1000. FÜRSTNER. Further communication on unilateral destruction of the globe. vi. meeting of the neurologists and alienists of Southwestern Germany, at Baden Baden, May 21 and 22, 1881. *Arch. f. Psychiatrie*, Bd. xii, 1, p. 244.

1001. GALEZOWSKI. Des thromboses vasculaires amenant des neuritis ou des signes d' embolie. *Transact. of the Intern. Med. Congr.*, London, viii.

1002. GRADMIGO. Dell' ascoltazione degli occhi. Communicazione al Congresso degli oculisti in Roma, *Gaz. Med. Ital. Prov.-Venete*, 1881, Oct.

1003. HAENSELL. Preliminary communication of experiments in inoculating syphilis in the iris and cornea of the rabbit. *Graefe's Archiv*, Bd. xxvii, 3. Iritis and little nodules developed upon the iris which very much resembled the syphilitic affections of the human eye.

1004. HOCK. Some practical hints in ophthalmic surgery. *Wiener Klinik*, Bd. vii, 11.

1005. HOWE. On a method of opening closed pupil after operation for cataract. *Tronsactions of the Internat. Med. Congr.*, London, viii.

1006. KRAMSZTYCK. On the removal of metallic deposits from the cornea. *Gaz. lek.*, 1881, *C. f. A.* p. 386.

1007. MARTIN. Nouvelles applications du fer rouge en chirurgie oculaire et de quelques modifications apportées aux galvanocautères. *Transact. of the Intern. Med. Congr.*, London, viii.

1008. OWEN. Removal of a fragment of iron from the vitreous body by means of the electro-magnet. *Brit. Med. Journ.*, 1881.

1009. PONCET. Comment l' ophthalmie sympathique peut-elle se produire après l' énervation? *Transact. of the Intern. Med. Congr.*, London, viii.

1010. SCHIESS-GEMUSEUS. Two cases of extraction of foreign bodies by means of the electro-magnet. *Klin. Monatsbl. f. Augenheilk.*, Dec., 1881.

1011. SCHÖLER. On sclerotomy; a contribution refuting the permeability of scleral scars. *Transact. of the Intern. Med. Congr.*, London, viii.

1012. SCHULTZ. Experiments on degeneration and regeneration of the nerves of the cornea. *Inaug. Dissert.* Dorpat, 1881. Following are the results obtained: 1. The degeneration of human nerve-fibres is due to an inflammatory irritation, and consists in a granular, more rarely a fatty disintegration of the axis-cylinder, and of the nuclei of the sheath. 2. The degeneration always stops at a nodal point, generally at one nearest the point of irritation on the cranial side; it always progresses in a longitudinal, never in a transverse direction. 3. Degeneration and regeneration cannot be separated in point of time; they are co-existent, *i. e.*, regeneration begins before the products of degeneration have disappeared (by solution, absorption, etc.). 4. The proliferation of the nuclei is the result of the inflammatory irritation; it begins at the nuclei of the sheaths lying within the nodal points which had remained intact. 5. The nuclei probably increase by division. 6. The newly formed nuclei form an (endothelial) coat of the old sheaths, give rise to the formation of new sheaths, and finally become normal nuclei of the latter. The excess of new nuclei disappears; how, is not shown. 7. The proliferation of the nuclei and the regeneration of the axis-cylinders are in no connection; the two processes are entirely independent of each other.

1013. ULLMANN. Contribution à l' étude sur l' étiologie de la cataracte. *Thèse de Paris*, 1881.

III—INSTRUMENTS AND REMEDIES.

1014. ANDREW. Use of eserine in sympathetic irritation of the eyes. *Lancet*, No. 25.

1015. AUBRY. Ophthalmostato. *Dict. encycl.*, vol. xvi.

1016. BAUDRY. Simple note sur l' emploi du prisme pour provoquer la diplopie monoculaire. Application à la recherche de la simulation. Lille, 1881.

1017. BÉNAKY. Du keratocone et de sa correction par les verres coniques. Paris, 1881, Baillière. 100 pages.

1018. BERTHOLD. Boracic acid in diseases of the eye and ear. Verein f. Wissensch. Heilkunde in Königsberg, 10, Mai, 1880. *Berl. klin. Wochenschr.*, 1881, No. 43.

1019. BRENAC. Recherches comparatives sur le Jaborandi, la Pilocarpine, et la Jaborine. *Thèse de Lyon*, 1881.

1020. BRETTAUER. The local application of iodoform. Report of the thirteenth meeting of the ophth. soc. at Heidelberg, 1881. Iodoform not only seems to cause no irritation in diseases of the conjunctiva and cornea, but also seems to diminish the secretion of the conjunctiva, to bring about retrogressive changes in granulations, and to act very beneficially in sclerosing keratitis. It is used in form of a powder, or as a salve in equal parts with vaseline.

1021. CARRERAS-ARAGÓ. Pilocarpine in diseases of the eye. *Revista de cienc. med.*, de Barcelona. Report in *C. f. A.*, p. 341. Its use is indicated in all affections in which an energetic contraction of the pupil is desired; for instance, in corneal ulcers threatening incarceration of the iris. Success slight in detachment of the retina.

1022. CHATZKELEWITSCH. The pharmacological and therapeutical importance of pilocarpine in general, and particularly in ophthalmology. *Inaug. Dissert.*, St. Petersburg, 1881.

1023. COURSSERANT. Note sur un ophthalmoscope à deux observateurs. *Rev. d' Ocul, du Sud-Ouest*, No. 15.

1024. DIANOUX. Du traitement du décollement de la rétine par les injections sous-cutanées de nitrate de Pilocarpine. *Arch. d' Ophth.*, No. 1.

1025. JOSSO. Du traitement du décollement rétinien par le nitrate de Pilocarpine. Paris, 1881, Doin. 60 pages. Out of sixteen cases, fifteen were successfully treated by subcutaneous injections of pilocarpine. Compare the less favorable results obtained by Carreras-Aragó precisely in regard to this point; No. 1021 this bibl.

1026. KAUDERS. Pilocarpine as an antidote of atropine. *Wiener med. Wochenschr.*, 1881, No. 45. Pilocarpine is a speedily-acting and sure antidote of atropine.

1027. KLEIN. The use of yellow ointment in diseases of the eye. *Wiener med. Presse*, No. 43. In all forms of keratitis, either with or without atropine.

1028. KRÖMER. On the use of antiseptic solutions of atropine and eserine. *Correspondenzblatt f. schweizer Aerzte*, 1881, No. 19. Boiling the solutions and adding boracic acid 4:100 and carbolic acid 1:1000 keeps them clear and free from the development of bacteria.

1029. LEONARDI CATTOLICA. Chloride of zinc in a solution of 1–3 % in all diseases of the conjunctiva. *Boll. d' Ocul.*, vol. iv, 4, Dec., 1881.

1030. MARÉCHAL. Un appareil pour l' appreciation de l' acuité chromatique dans un examen sommaire du personnel de la marine et des chemins de fer. *Transact. of the Intern. Med. Congr.*, London, viii; and a letter on this subject in *Boll. d' Ocul.*, Dec., 1881.

1031. SCHÖLER. Refraction-ophthalmoscope. *Verhandl. der physiol. Gesellsch. zu Berlin*, 1881, No. 4 and 5. For the determination of all forms of ametropia, including astigmatism. With an illustration.

1032. SCHWEIGGER. The use of strychnine, and remarks upon visual disturbances due to hysteria. *Clin. Monatsbl. f. Augenhk.*, Nov.

1033. SZIKLAI. Pilocarpinism. *Wiener med. Wochensch.*, No. 35. Case of poisoning by pilocarpine.

1034. SZPILMAN and LUCHSINGER. Atropine and unstriped muscular fibres. *Arch. f. d. ges. Phys.*, Bd. xxvi.

1035. THAN. Clinique ophthalmologique du Dr. Dehenne. Note sur l' emploi thérapeutique de l' Eserine. *Rec. d' Ophth.*, Oct. In abscesses of the cornea, in purulent ulcerations, and serpent ulcers. MARCKWORT.

1036. UHTHOFF. Remarks on determining the field of vision. *Klin. Monatsbl. f. Augenheilk.*, Oct. Combination of Förster's and Scherk's perimeters.

1037. VERON. Considérations sur le traitement de l' amblyopie par la strychnine. *Thèse de Paris*, 1881.

IV.—ANATOMY.

1038. CIACCIO. Sopra il distribuimento e la terminazione delle fibre nervee della cornea, e sopra l' interna construitura del loro cilindro dell' asse, nuove investigazioni microscopiche. Bologna, 1881.

1039. DENISSENKO. On the external granular layer of the retina of the eel and on œdema of the cornea in morbus Brightii. Report of the thirteenth meeting of the Ophth. Soc., Heidelberg, 1881.

1040. DUWEZ. Nerf optique; anatomie et pathologie. *Dict. encycl.*, vol. xvi.

1041. GIONAVARD. Caso di anoftalmia doppia congenita. Mancanza dei nervi ottici. Atrofia dei lobi occipitali. *Riv. sperim. di frenatria e di medicina leg.*, vol. iv, 3. Complete absence of the globe, ciliary ganglion, optic nerve, and chiasm; fatty degeneration of the muscles on both sides.

1042. KÖNIGSTEIN. Notes on histology. *Graefe's Arch.*, Bd. xxvii, 3. 1. The nerves of the sclera. The human sclera has nerves of its own ending within it. 2. The pupillary membrane. It consists of 4-5 larger blood-vessels, forming arches; numerous small blood-vessels, coming from the iris and communicating with each other, empty into these arches; the centre of the pupillary membrane is always free from blood-vessels. The blood-vessels of the pupillary membrane do not come from the circulus iridis minor, but in conjunction with the blood-vessels of the ciliary muscle and ciliary processes form the ciliary blood-vessels. The retrogressive change begins toward the end of the 7th or beginning of the 8th month.

1043. KUHNT. Some senile changes in the human eye. Report of the 13th meeting of the Ophth. Soc., Heidelberg, 1881. The senile changes in the periphery of the retina lead to atrophy of the nervous elements; besides ordinary atrophy an amalgamation of the two granular layers takes place and the rods and cones disappear. A high degree of hypertrophy of the connective tissue develops. There is also cystoid degeneration. The ciliary body shows: 1, thickening and vascularization of the reticulate substance; 2, the formation of excrescences projecting into the vitreous body; 3, a development of cysts. Atrophy of the choroid is a senile change almost constantly observed, and may be considered as the primary change, which in turn gives rise to those in the retina.

1044. KUHNT. On the physiological excavation of the optic nerve. The same rep. Kuhnt denies Mauthner's assertion that the excavation visible with the ophthalmoscope is entirely or partly filled with diaphanous nerve fibres; the excavation really exists.

1045. KUHNT. On the structure of the human fovea centralis. The same rep. There is no thinning of the inner layers of the retina at the bottom of the fovea centralis; they disappear entirely with the exception of the musivic layer. Only the cones, the outer granular layer, and the outer fibrous layers remain, the limitans interna joins them almost immediately.

1046. RYMARKIENVICZ. Cases of vitia primæ conformationis oculi. *Medycyna*, 1881. *C. f. A.*, p. 384. Case of congenital cataract; two cases of persistent hyaloid artery; case of two pupils in the same eye.

1047. SCHENKL. Congenital imperfect development of the levator palp. sup., rect. ext., rect. int., rect. sup., and obl. inf. of both eyes. *C. f. A.*, Nov.

1048. SKREBITZKY. Case of anophthalmus with congenital cysts in the lower lids. *Klin. Monstabl. f. Augenh.*, Nov.

1049. STILLING. The chiasm and optic tract. *Arch. f. Psychiatrie*, Bd. xii, 1, p. 246. The uncrossed fibres are the most numerous in the chiasm, then those of the two commissures, while the crossed fibres are the fewest in number. The latter lie within the uncrossed fibres like in a groove. The anterior commissure is also found in animals, very distinctly in the dog. It occupies mainly the upper surface of the chiasm, the posterior commissure the lower. The posterior commissure may be traced to the corpus geniculatum laterale, mediale, the corpora quadrigemina, and the radix descendens, to which crossed and uncrossed fibres also go, so that anatomically and pysiologically considered, it certainly belongs to the optic tract. Stilling could not trace it as far as the tectum opticum. The radix descendens divides into two branches: the larger one passes under the corpus geniculatum mediale into the lemniscus and can be traced into the olive; the smaller one ends in the pons Varolii. Within the optic nerve the fibres are not arranged as generally represented; those of the commissures, both the crossed and uncrossed, lying closely together.

1050. VIRCHOW. The blood-vessels of the choroid of the rabbit. *Transact. of the Phys.-Med. Soc.*, Würzberg, new series, vol. xvi, and reprint. Würzberg, Stahel. The rabbit has two ophthalmic arteries: the smaller internal ophth. artery comes from the internal carotid; the larger external ophth. artery comes from the internal maxillary artery. There are also two arteries in the choroid (posterior ciliary arteries), a temporal and a nasal one, each supplying one half of the uvea; both come from the external ophthalmic artery, though the nasal branch is also connected with the internal ophthalmic artery. The short posterior ciliary arteries are branches of these two arteries. The veins collect near the ciliary margin of the choroid. There are 4 vorticose veins; the veins in the choroid form a peculiar network, which must be divided into a ciliary and a proximal zone.

1051. VOSSIUS. The growth and physiological regeneration of the epithelium of the cornea. *Graefe's Arch.*, Bd. xxvii, 3. The epithelium of the cornea is reproduced by the basal cells, the cells subdividing after preceding karyokinesis.

1052. WOLFF. The nerves of the cornea. *Arch f. micros. Anatomie*, Bd. iii, 1881, Dec. In the cornea the axis-cylinder is enveloped by the medullary substance and the sheath of Schwann. Most of the corneal nerves form a network; some terminate in fine points in the epithelium or corneal substance without any thickening. No connection between the nerves and corneal corpuscles or epithelial cells could be demonstrated.

V.—PHYSIOLOGY.

a.—GENERAL PHYSIOLOGY: OPTICS, CORNEA, IRIS, REFRACTIVE MEDIA.

1053. CAHN. The physiological and pathological chemistry of the eye. *Zeitschr. f. phys. Chemie.*, Bd. v, p. 214. The reaction of fresh retinæ is generally alkaline; on the external surface sometimes acid. The retina of the

ox contained: water, 86.52; albuminous substances, 6.77; substances resembling albumen, 1.59; alcohol extract, 0.25; aqueous extract, 0.42; cholesterine, 0.77; fat, 3.47; lecithine, 2.03; soluble salts, 0.93; insoluble salts, 0.02; traces of cerebrine. There is no essential difference between the chemical composition of the aqueous humor and the vitreous. The lens consists of globuline. In cataractous lenses a decrease of albumen could be demonstrated, as also the coagulation of a portion of the albumen.

1054. COBBOLD. Observations on certain optical illusions of motion. *Brain*, vol. iv, 1, 1881.

1055. DENISSENKO. Investigations on the nutrition of the cornea. *Virchow's Arch.*, Bd. lxxxvi, 3. 1. The cornea does not draw its nourishment from the anterior chamber (Knies, Ulrich), but from the surrounding blood-vessels in the sclera. Therefore the cornea is nourished in the same manner as every other tissue of the body. 2. Although the blood-vessels nourishing the cornea are situated in the sclera at some distance from the sclero-corneal margin, the nourishing fluid, after leaving them, is conducted through the fibres and fissures of the sclera to the corneal margin, where it enters the lacunar system, and is distributed throughout the entire thickness of the cornea, and then discharged into the anterior chamber. 3. The current does not flow from the centre to the periphery of the cornea (Knies, Ulrich), but from the periphery to the centre (Cohnheim, Szokalski), and not from behind forward (Knies, Ulrich), but from in front backward. 4. Therefore the stomata, which Klebs and others have demonstrated in the epithelium of Descemet's membrane, do not form the commencement of Recklinghausen's lymph-spaces for drawing nourishment from the anterior chamber, but serve to discharge the waste products. 5. This shows that the cornea does not draw its sustenance from the anterior chamber, but that, on the contrary, the waste products are discharged into the anterior chamber. 6. It therefore follows that the anterior chamber is an enlarged duct for discharging the aqueous humor. 7. Therefore it may be said that not the anterior chamber nourishes the cornea, but the cornea the anterior chamber.

1056. EMMERT. The relative size of after-images. With appended remarks by Zehender. *Klin. Monatsbl. f. Augenhk.*, Dec. The linear size of an after-image is equal to the linear size of the object multiplied by the distance at which the after-image is observed, *i. e.*, multiplied by the multiple of the distance at which the object was observed, the product divided by the simple distance. The area of the after-image (an object with four parallel sides) is equal to the length of one side of the object multiplied by the distance at which the after-image is seen, *i. e.*, multiplied by the multiple of the distance at which the object was seen, divided by the simple distance, and the quotient squared.

1057. JACKSON. Relation between the apparent movement of objects and the rotation of the eyes. *Lancet*, No. 17.

1058. JACKSON. Apparent movements of objects during involuntary movement of the eyes. Ophth. Soc. of Great Britain, Oct. 13, 1881. *The Ophth. Rev.*, p. 16.

1059. JORISSENNE. Les mouvements de l'iris chez l'homme à l'etat physiologique. Mémoire couronné au concours de la Société de médicine de Gand. Paris, 1881, 52 pages with 1 plate and illustrations in the text.

1060. ORD. Unilocular diplopia. Ophth. Soc. of the United Kingdom. *Lancet*, No. 17.

1061. OUGHTON. The phenomena of double vision and touch. *Same journal.*

1062. RIEGER and VON FORSTER. Eye and spinal cord. *Græfe's Arch.*, Bd. xxvii, 3. It is hardly possible to give an abstract of this important paper. The principal point consists in demonstrating that the eye stands in close connection with nervous influences acting upon the blood-vessels.

1063. SCHMIDT-RIMPLER. The empiric theory of vision. *Sitzungsber. der Gesellch. zur Beförderung der gès. Naturwissensch.* zu Marburg, 1881, No. 4, Dec.

A child 3 years old had forgotten its sight so completely in consequence of an acquired opacity of the lens, that after being successfully operated it had to learn to see again. This is against the view of Dubois-Reymond, according to which the ability to interpret correctly the impressions on the senses is not exactly congenital, but comes suddenly, the child not being taught by experience in the way assumed by the empiric theory.

b.—RETINA, OPTIC NERVE, CENTRAL ORGANS, MUSCLES.

1064. EXNER. Investigations on the localization of the functions in the gray matter of man. Vienna, 1881, Braumüller, 180 pages, 25 plates. Chap. vii. The nerve-centre of the muscles of the eye in the gray substance, including the lev. palp. sup. Chap. x. The nerve-centre of the sense of sight.

1065. LANDOLT. Étude sur les mouvements des yeux à l' état normal et à l' état pathologique. *Arch. d' Ophth.*, vol. 1, 7. He describes a method of measuring the monocular and binocular fields of fixation and its results in normal, ametropic, and anisometropic eyes; also in insufficiency of the internal and external recti, and various forms of concomitant and paralytic squint. Numerous interesting observations with illustrations of the field of fixation demonstrate the value of the method in diagnosis and therapeutics.

V. MITTELSTÄDT.

1066. SZOKALSKI. The consequences of irritation of the optic nerve. *Przegl. lek.*, 1881. Rep. in *C. f. A.*, p. 383. He opposes the proposition that every nerve of special sense reacts, when irritated in any way whatsoever, in its own peculiar way; for he asserts to have discovered that an irritation of the optic nerve does not necessarily produce the sensation of light. Schmidt-Rimpler has lately proven just the contrary.

1067. URBANTSCHITSCH. Observation of physiological soul-blindness. *Mea. Jahrbücher*, Vienna, 1881, H. 3 and 4.

c.—COLOR-PERCEPTION.

1068. COHN. New methods of testing the color-sense by pseudo-isochromatic plates. *C. f.* A. He seeks to defend himself against the objections raised by Mauthner. V. Nos. 153 and 626 this bibl.

1069. COSMINSKY. The investigation of color-blindness. Lecture delivered before the medical society at Warsaw. *Wratsch*, No. 16. In favor of Pflüger's method.

1070. DONDERS. Sur les systèmes chromatiques. *Ann. d' Ocul.*, Nov. and Dec., 1881. The separation into red- and green-blindness can be maintained. It is unjustifiable to consider those colors, which are wanting in the various forms of dyschromatopsia, as fundamental colors of the normal system.

1071. EMERY. La percezione endottica del colore del fondo del' occhio. *Ann. dell' Acad. delle Scienze*, vol. vi, 1881.

1072. FRANKHAUSER. Examination of the scholars of the high-school at Burgdorf for color-blindness. Ann. rep. of the high-school at Burgdorf at the close of the school year, 1880–81. Holmgren's and Pflüger's methods were employed. Stilling's plates are not always reliable, and can therefore not be recommended. Red-green blindness was found in 6.2% out of 177 scholars; 44 made mistakes, though not color-blind. It is advised to cultivate the color-sense at school; the system of Magnus was used for this purpose with good results in general.

1073. v. FLEISCHL. On the theory of color-perception. *Biol. Centralbl.*, No. 16, Nov. 30, 1881. No investigations, including the latest, have succeeded in disproving the theory of Helmholtz or proving that of Hering. On the contrary, some objections have been raised, especially by Knies, Macé, and Nicati, which are absolutely incompatible with the hypothesis of Hering. It is also difficult to understand why, if there are three kinds of substances for color-perception,—red-green, blue-yellow, and black-white,—only the first two should be wanting (red-green, blue-yellow blindness), and there is no case in which the black-white substance is missing. All objects should appear colored to such persons, without any shading in brightness. It seems unnatural to consider brightness as a special quality of the visual sense, as is necessary acccording to Hering's theory, which is entirely separate from the perception of color. We are accustomed to consider brightness only a degree of intensity of color, and not a special perception.

1074. GILLET DE GRANDMONT. Note sur un procédé expérimental pour la determination de la sensibilité de la rétine aux impressions lumineuses colorées. *Rec. d'Ophth.*, 1881. In order to test the sensibility of the retina for colored light, Gillet uses a chromatoscope constructed by himself. It consists of a black disc with apertures, behind which either colored or white surfaces can be displayed. The eye to be examined gazes steadily at a point to one side of the disc; the perception of the colored surfaces, at first distinct, gradually disappears; if at this point the colored surfaces are replaced by white ones, they appear in the complementary colors. MARCKWORT.

1075. v. HIPPEL. Unilateral color-blindness. *Graefe's Arch.*, Bd. xxvii, 3. The tests applied by Hippel to his patient are unfavorable to the theory of Young-Helmholtz, and favorable to that of Hering.

1076. KOLBE. The most practical methods for testing the color-sense of large numbers of people. *C. f. A.*, Dec. Neither the methods of Holmgren nor Stilling suffice. Both methods should be employed simultaneously, and their use be made obligatory. A comparison of the statistical results obtained by the investigations of various authors is only possible if the examination is combined with a quantitative determination of the color-sense. For this purpose Weber's plate is recommended.

1077. KUHNT. On the colored induction of light. *Graefe's Arch.*, Bd. xxvii, 3. Every color can only induce its own quality. The color of the after-image of a disc of black velvet which has been gazed at for 45 seconds, is always the same as that of the disc itself. The color produced by successive induction is not due to contrast and erroneous judgment, but is the result of a reaction in the visual substance.

1078. MAGNUS. Colors and creation. Eight lectures on the relation of the colors to man and nature. Breslau, 1881, 290 pages and one chromo-lithographic plate. 1. The nature of color. Color is nothing existing objectively, but a subjective function. 2. Perception of color. Discussion of the theories of Young-Helmholtz, Hering, Preyer. 3. The biological functions of color. Colors have no fixed biological functions, but are collateral phenomena of other biological processes. 4. The color-sense of animals. It is undoubtedly true that animals have a perception of the various kinds of light, the nature of which, however, is unknown. Grant Allen, Carus Sterne (Ernst Krause), and others delegate to both man and animals the same power of perception of color, though this assertion is directly opposed to the conclusions obtained from physiology and anatomy. Such teachings are the result of philosophical speculation, and not of scientific investigation. 5. The development of the color-sense. The determination of this question now belongs to physiology and the natural sciences. 6. Color-blindness. 7. The æsthetics of color. They are based entirely on physiology. 8. The education of the color-sense.

1079. PARINAUD. Des troubles visuels qui diminuent l' aptitude à reconnaître les signaux colorés. *A. d' Ocul.*, 1881, Nov.-Dec. The power to distinguish colored signals may be reduced by the following conditions: *a*, congenital Daltonism; *b*, acquired true Daltonism; *c*, acquired false Daltonism; *d*, relative dyschromatopsia. Parinaud calls acquired false Daltonism a condition in which the perception of light is diminished and the power of distinguishing color is reduced, when the intensity of the illumination is diminished, while under usual illumination the color-sense is normal. By relative dyschromatopsia Parinaud means those conditions in which the perception of light and color is normal, while the refraction or refractive media have been altered. He proposes the use of the instrument described by himself (*Ann. d' Ocul.*, March and April, 1881), as it determines the perception of light and color, and the power of vision.

1080. PFLÜGER. Further observations of color-blind persons. *A. f. A.*, vol. xi, 1. Pure red and green do not produce a specific sensation of color in color-blind persons, but only of neutral light, of gray. A person who has no specific perception of red, has none of green either.

1081. PONTAPPIDAN. Nomenclature of colors, and color-sense. *Ugeskrift for Laer.*, Kjöbenhaven, 1881, 4 r., vol. iv, No. 30. The author has examined the nomenclature of colors and color-perception of the inhabitants of the Sandwich Islands, and found that the Hawaiian language has exact names only for white, black, and red; the other appellations are indefinite, and green and blue bear the same name. The color-sense is well developed; of 394 men, and 103 women who were tested with Holmgren's worsteds, 5 were color-blind. The author has found the same results in every part of the globe, and discovered

the general law, that in the nomenclature of colors, both ancient and modern, blue and green are by far not as distinctly defined as the colors of the red end of the spectrum.

1082. PURTSCHER. A case of erythropsia after traumatic cataract. *C. f. A.*, Nov.

1083. SAMELSOHN. The question of a nerve-centre for color-perception. *Centralbl. f. d. med. Wissensch.*, 1881, No. 47. Typical left-sided hemianopia for all colors; within the defect all colors seemed gray. See No. 604, this bibl.

1084. SCHENKL. The association of words with colors. *Prager med. Wochenschr.*, 1881, No. 48.

1085. SZILÁGYI. On simultaneous contrast. *Centrabl. f. d. med. Wissensch.*, 1881, No. 47. Simultaneous contrast is produced without the influence of fluorescence of the refractive media, as Giraud-Toulon maintains. It is produced, not in the retina, but in the brain.

1086. VOLKELT. The colors and the soul. *Zeitschr. f. Philos. u. philos. Kritik.*, Bd. lxxix, 1, Leipzig, 1881. The transmutation of the quantitative differences between the irritation of the nerves, caused by the varying wave-lengths of the ether, into a perception of the different colors is an action of the soul itself.

B.—ANOMALIES OF REFRACTION AND ACCOMMODATION, LIDS, LACHRYMAL APPARATUS, MUSCLES AND NERVES, ORBIT AND NEIGHBORING CAVITIES, CONJUNCTIVA, CORNEA, AND SCLEROTIC.

BY DR. C. HORSTMANN.

I.—ANOMALIES OF REFRACTION AND ACCOMMODATION.

1087. SORMANI. Miopia. *Geografia nosologica dell' Italia*, Roma, 1881. The author discusses myopia and blindness in general, basing his remarks on the observations made by the Italian recruiting commission. The statements, though interesting, are of no value for the statistics of myopia, as only those cases are recorded which by the Italian law (*m.* $\frac{1}{8}$ and more) are relieved from military service. The number of recruits showing such degrees of myopia was 5,761 out of more than 2,000,000, or 2.8 per thousand. Southern Italy and the coast furnished most of them.

But as just in these regions frequently more than 70% of the recruits can neither read nor write, myopia acquired at school is in Italy out of the question. (This remarkable fact has already been observed by Mannhardt and the reviewer. They not seldom found the highest degrees of myopia in persons who never had been to school.)

The author has also measured accurately the depth of the orbit of twelve skulls. In brachycephalous skulls the average depth of the right orbit was 42.9 *mm.*, of the left 43.2 *mm.*; in dolichocephalous skulls 48.3 and 47.9 *mm.*

DANTONE.

II.—LIDS.

1088. LAGETSCHNIKOFF. A rare case of elephantiasis palpebrarum. *Med. Uebersicht*, Bd. xv, p. 894. Both lids are very much enlarged; the upper hangs down to the nasal angle. The disease began in early childhood.
HIRSCHMANN.

1089. RICHON. Chancre induré de la paupière inférieure suivi d' accidents secondaires graves. *Gaz. des Hôp.*, 1881.

1090. BAUDRY. Note sur un cas d' emphysème des paupières. *Gaz. des Hôp.*, 1881, 3, Dec.

1091. SQUARE, WM. Entropium senile. *Brit. Med. Journ.*, 1881, No. 26. Square cures senile entropium by applying sutures. Six cases with good results.

1092. BERGER. Ectropion considerable de la paupière inférieure. Greffe par transplantation d' un lambeau taillé dans la peau du dos, combinée avec la blépharoraphie. *Rev. d' Ocul. du Sud-Ouest*, No. 14, p. 324.

1093. CAUDRON, VIRGILE. Ectropion cicatriciel. Greffe héteroplatique. Guérison. *Rev. d' Ocul. du Sud-Ouest*, No. 14, p. 332.

1094. MANDELSTAMM. A case of sarcomatous ectropium, with some remarks upon trachoma. *Arch. f. Ophth.*, Bd. xxvii, 3, p. 101. From the condition of the ectropionized lids, the author concludes that the tendency of the epithelium of the conjunctiva to become hypertrophic is great, not only when directly exposed to the air, but also when, in consequence of unknown injurious influences (dust, smoke, scrofula, barrack-air, etc.), trachoma develops. The hypertrophy of the epithelium, together with the hyperplasia of the adenoid tissue, is of primary importance in trachoma; perhaps the pertinacity of the disease may be ascribed to it. When the hypertrophy has once begun, it can cause at any time fresh irritations of the adenoid tissue.

1095. CRITCHETT, ANDERSON. A case of complete symblepharon successfully treated by operation. *Brit. Med. Journ.*, Dec. 10, 1881, p. 934. In this case the symblepharon resulted from a burn; the lower lid covered the greater part of the pupillary area. It was dissected away from the globe, and then two conjunctival flaps were formed and the exposed sclerotic covered with them. The result was a good one. FITZGERALD.

1096. MAKLAKOFF. Operation for trichiasis. *Ann. d. russ. chir. Ges.*, No. 11. Maklakoff recommends the use of serres fines instead of sutures in operating for trichiasis. HIRSCHMANN.

1097. ARLT. Ankyloblepharon (peculiare). *Ber. über d.* 13, *Vers. d. ophth. G.*, p. 126. In a child which could only half open the right eye, though there was no photophobia, a pale-red elastic membrane was found to be the cause, which in the right eye extended from the outer canthus to the centre, in the left as far as the inner third of the otherwise normal palpebral fissure. Not only the intermarginal portion of the upper and lower lids, but also the outer canthus of both eyes were normal. The globe was freely movable, and a probe could be passed between it and the membrane into the conjunctival sac behind the outer canthus. The membrane was said to have developed after an inflammation of the eyes when the child was eight months old, probably a croupous and membranous conjunctivitis.

1098. MEYER. Epithéliome de l' angle interne de l' œil gauche : ablation. Greffe dermique. Guérison. *Rev. d' Ocul. du Sud-Ouest*, No. 14, p. 320 ; *Bull. et Mém. de la Soc. de Chir. de Paris*, Nos. 8 and 9.

III.—LACHRYMAL APPARATUS.

1099. ARMAIGNAC. Considérations sur l' étiologie et la thérapeutique des affections des voies lacrymales. *Rev. d' Ocul. du Sud-Ouest*, Sept., Oct., Nov., 1881.

1100. ARMAIGNAC. Extraction par un nouveau procédé d' un fragment de sonde d' argent logé par accidents dans les voies lacrymales. *Rev. d' Ocul. du Sud-Ouest*, Aug., 1881.

IV.—MUSCLES AND NERVES.

1101. FANO. Sur les fonctions du muscle petit de l' œil chez l' homme. *Compt. rend. de l' Acad. des Sc.*, Jan., 1881.

1102. ULRICH. The etiology of convergent squint. A proposition to prevent it. Kassel, Theo. Fischer, 1881. During the time in which convergent squint is developing, considerable information can be gained in regard to its etiology and treatment. The cause of convergent squint is the great strain upon the accommodation. If this condition is eased, the excessive strain on the internal recti also ceases, as long as no organic changes have taken place within them. This, however, will not be the case when attended to at an early stage. The author, therefore, proposes the occasional use of convex glasses and instillation of a solution of eserine of $\frac{1}{2}$—$\frac{1}{4}$% in children with a tendency to squint. There are prospects of success only when the result for the moment is perfect.

1103. BJELOFF. Contributions to the knowledge of the conditions of dynamic equilibrium of the internal and external recti muscles in eyes with different states of refraction. *Inaug. Diss.*, 1881, St. Petersburg.

1104. BERRY. Clinical notes and remarks on two unusual forms of strabismus. *Ophth. Rev.*, vol. i, 1881, No. 46.

1105. LANDOLT. Disturbances of the movements of the eyes. *Rep. of the Intern. Med. Congr.*, London, Ophth. Section. In order to treat rationally and successfully disturbances of motility of all kinds, it is necessary to measure the monocular and binoculars fields of fixation and the strabismus-angle. These measurements are executed most easily by using a perimeter with a toothed board for fixing the head and a tangent-scale on the wall, as described by the author. The treatment should not be confined to one method alone, but should consist of a combination of all suitable to the case. They are : correcting glasses, electricity, orthopedy, operation, general treatment.

1106. E. NETTLESHIP. Case of paralysis of third, fifth, and sixth nerves, of four years' duration, in a girl æt. 14, the subject of inherited syphilis. *Trans. of Pathological Soc. of London*, xxxii, 13, 1881. The other evidences of hereditary syphilis were notched teeth, old keratitis, and prominent frontal eminences. There was perforation of the septum nasi. E. NETTLESHIP.

1107. E. GRÜNING. Traumatic ophthalmoplegia. *Med. Record*, Nov. 12. All the muscles of the left eye were paralyzed by a blow of the fist. The O. N.

showed no alteration with the O. S., but there was total blindness. G. thinks there must have been fracture of the pyramid of the orbit with laceration of the optic nerve. SWAN BURNETT.

1108. ABADIE. On ophthalmic vertigo. *Intern. Med. Congr.*, London, 1881, Ophth. Section. Abadie describes a kind of vertigo, which seems to be due to a disturbance in the innervation of the muscles of the eye. It may attain a very high degree, and then the motion of the eyes appears checked to a great extent, especially upward.

V.—ORBIT AND NEIGHBORING CAVITIES.

1109. C. HIGGENS. On distension of the frontal sinuses. *Guy's Hosp. Reports*, vol. xxv, 27, 1881.

A report of four cases in H.'s practice, with critical remarks and citation of published cases and opinions. In Case 1, M., 32, there had been abscess in same place at æt. 7, and injury, followed by removal of dead bone from same place, æt. 16. Tumor noticed 8 months. Case 2, M., 13, no injury, swelling noticed 6 months. Case 3, F., 19, no injury, tumor 8 months. Case 4, M., 36; æt. 14 was kicked over his eyes, æt. 29 another injury by iron bar over orbit. Pain in L. supra-orb. region began two years later, together with some ptosis, and pain at pulley of supr. oblique; no swelling till 3½ years after he was first seen, or 5–6 years after second injury. All treated by free incision and establishment of an opening from floor of distended sinus into nose; result good in all. Remarking on the difficulty of diagnosis in this disease, H. makes the important, and probably new observation, that the swelling (when it has caused absorption of bone) *varies in size at different times of day*, being smaller after lying down for some hours; it always points *above* the tendo oculi.

E. NETTLESHIP.

1110. KRAMOSZTYK. A foreign body in the orbit. *Gaz. lekarsk*, 1881, p. 76. A man 45 years old was attacked with typhoid fever, shortly after having received a blow from the shaft of a wagon. The whole time he was ill he complained of severe pains in the eye. Three months later slight blepharospasm developed; the eye was deflected inward considerably. There was a small ulcer at the upper inner margin of the cornea, next to which a foreign body, firmly imbedded, was detected by the probe. It was extracted with difficulty and found to be a piece of wood 6 *cm.* long. The canal in which it lay had a smooth cicatricial surface, and bone was exposed. The convergent squint was caused by the formation of this canal, which extended inward along the internal rectus muscle. Vision was not perceptibly reduced. HIRSCHMANN.

1111. NARKIEWICZ-JODKO. Cases of lesions of the eye of traumatic origin. *Gaz. lek.*, 1881. After an insignificant injury an inflammation of the orbital tissue set in, which led to the formation of an abscess. The abscess was opened and a temporary improvement ensued, though there was soon a relapse. The patient, who went elsewhere, was treated expectatively. Three weeks later a second abscess opened spontaneously, and all the symptoms of disease disappeared, the eye, however was totally amaurotic, showing atrophy of the optic nerve. It follows, therefore, that in abscesses of the orbit, an active, not a waiting treatment must be adopted at an early date.

1112. CHAUREL. Quelques cas de perte unilatérale immédiate et persistante de la vue à la suite de traumatisme du crâne. *France Med.*, July 16, 1881.

1113. BERLIN. A case of injury of the optic nerve through fracture of the optic canal. *Ber. über de* 13. *Vers. d. ophth. Ges.*, p. 81. The author observed at the autopsy of a suicide a fracture of the optic canal, which had severed the nerve not only within the canal but also within the brain.

1114. J. R. WOLFE. Aneurism of orbit (pulsating exophthalmus) following injury, cured by ligature of common carotid. *Lancet*, Dec. 3, 1881, (ii, 945.)

F., 22; symptoms began 3 months after a blow on L. eye, with pain and beating in the head, slight proptosis and bruit heard in orbit; 8 months after injury proptosis greater; a soft, pulsating tumor near inner canthus, with thrill and puffing bruit; pulsation stopped by pressure on carotid; papillitis with extreme venous engorgement. Vision somewhat defective; ulceration of cornea. Ligature of common carotid by Dr. Foulis, 8½ months after injury; full antiseptic precautions and catgut ligature. Pulsation stopped, and tumor much diminished. S. recovered perfectly and O.D. cleared. Four weeks after operation only slight proptosis. E. NETTLESHIP.

1115. HIGGENS. Case of vascular protrusion of the eyeball. *Trans. of the Med. Chir. Soc.* of London, vol. lxiv.

1116. SKREBITZKY. Case of anophthalmus with congenital cysts in the lower lids. *Klin. Monatsbl. f. Augenhk.*, B. xix, p. 423. In a child 6 months old otherwise healthy and with a normal skull, the orbit was found absolutely empty. Globular tumors of the size of normal eyes protruded upward beneath the mucous membrane of the lower lids; fluctuation was easily perceptible. Either they were cysts of the lower lids or malformed eyes.

1117. OSTERWALD. A new case of leucæmia with bilateral exophthalmus due to orbital tumors. *Arch. f. Ophth.*, Bd. xxvii, 3, p. 203.

VI.—CONJUNCTIVA, CORNEA, SCLERA.

1118. SATTLER. The nature of trachoma and a few other diseases of the conjunctiva. *Ber. über d.* 13, *Vers. d. ophth. Ges.*, 1881, p. 18. See these ARCHIVES, vol. x, p. 459.

1119. VOSSIUS. The treatment of diphtheritic conjunctivitis. *Klin. Monatsbl. f. Augenheilk.*, Bd. xix, p. 418. Vossius recommends the local use of a 4-per-cent. solution of salicyl-glycerine in diphtheritic conjunctivitis.

1120. SCHAFFER. The treatment of the contagious diseases of the conjunctiva. *Wiener med. Presse*, No. 27. The author uses in blennorrhœa iodide of sodium internally, zinc-collyria, calomel and yellow ointment externally, and advises such patients to remain in a cold room.

1121. PRZYBYLSKI. Some thoughts on diphtheritic conjunctivitis and its connection with diphtheria and croup in general. *Pam. Tow. Lek. Warsz.*, 1881, vol. lxxvii, 3, p. 491. The author gives a short review of the development and present state of our knowledge of diphtheria in general, describes diphtheritic conjunctivitis, reports 80 cases of this kind, and draws conclusions as to the nature of the disease, the method of treatment, etc.

1122. KRANHIK. The cause of the diseases of the conjunctiva in the army. *Wratsch.*, No. 10, 1881. The causes are insufficient sleep, drill in the sun, too tight cravats and collars, besides bad air in the barracks, and diseases or irritability of the conjunctiva acquired before serving. HIRSCHMANN.

1123. H. S. SHELL. Autumnal conjunctivitis. *Med. and Surg. Rep.*, Nov. 5, 1881.

1124. FONTAN, J. Des adéno-papillomes de la conjonctive. *Rec. d' Ophth.*, Dec., 1881. A tumor about the size of a pea was found on the sickle-shaped edge of the semilunar fold, with a thin stem about 3 *mm.* long; it was removed by thermocautery. Its surface consisted of papillæ covered with pavement epithelium. The tumor was traversed by fascicles of connective tissue, between which lay acinous glands. MARCKWORT.

1125. FIALKOWSKY. A case of papulous syphilis of the conjunctiva bulbi. *Wratsch.*, No. 5, 1881. After a syphilitic angina and condylomata at the anus, a nodule resembling a phlytænula developed on the conjunctiva of the globe 3–4 *mm.* downward and inward from the cornea, which ulcerated on the fourth day, and disappeared without any local treatment after 14 subcutaneous injections of sublimate (1 *cgrm.* per dose). HIRSCHMANN.

1126. DUJARDIN. Tumeur sous-conjonctivale de nature épithéliale. *Journ. des Sc. méd. de Lille*, Nov., 1881.

1127. UHTHOFF. A case of unusual degeneration of the human conjunctiva. *Virchow's Arch.*, Bd. lxxxvi, p. 322.

1128. PANAS. Considérations sur la nature et le traitement de la kératite interstitielle diffuse. *Arch d' Ophth.*, vol. i, No. 7, 1881. Diffuse keratitis is much more common in rhachitis and scrofula than in hereditary syphilis. Panas makes the distinction of an acute and a chronic form. In the former the cornea is highly irritated, and numerous blood-vessels are formed. In one such case peritomy produced a favorable result, but in another sclerosis of the cornea ensued. In treating the chronic form he advises vapor and subsequent massage; iridectomy, sclerotomy, and paracentesis act only by causing the formation of blood-vessels at the wound. V. MITTELSTÄDT.

1129. MIKUCKI. Eserine in keratitis. *Medycyna*, 1881. Mikucki recommends the use of eserine in ulcers of the cornea, especially at the periphery, basing his advice on the clinical history of 12 cases.

1130. KLEIN. The use of yellow ointment in diseases of the eye. *Wiener med. Presse*, No. 43. Klein used yellow ointment in every disease of the cornea with good result.

1131. KRAMSZTYK. Neuroparalytic keratitis. *Medycyna*, 1881. Kramsztyk discusses the identity of the so-called neuroparalytic keratitis with other affections of the cornea which occur in severe forms of disease, when the patients remain unconscious for some length of time with eyes half open. They are due to the loss of moisture of the cornea.

1132. SBORDONE. Il ferro revente nelle ulcere della cornea. *Movimento med. chir.*, Anno xiii, fasc. 12, 1881. Clinical history of 4 cases of deep ulcers of the cornea, in which the ferrum candens was used with good result.

DANTONE.

C.—IRIS AND UVEAL TRACT, GLAUCOMA, SYMPATHETIC OPHTHALMIA, REFRACTIVE MEDIA (LENS AND VITREOUS BODY), RETINA AND FUNCTIONAL DISTURBANCES, OPTIC NERVE, INJURIES, FOREIGN BODIES (PARASITES), OCULAR AFFECTIONS IN CONSTITUTIONAL DISEASES.

By Dr. A. NIEDEN.

I.—IRIS AND UVEAL TRACT.

1133. Angelucci. Su un caso di tuberculosi dell' occhio originata nelle tessitura trabecolare del canale del Fontana. *Gaz. med. di Roma*, Dec., 1881. The tumor was observed in an otherwise healthy girl of 13, and partly filled the anterior chamber, partly formed an ulcer at the outer sclero-corneal margin, where an incision had been made. The tuberculous nodules were mainly located between the ciliary processes and ciliary muscle. Secondary changes only had taken place in the iris, ciliary processes, and choroid; the retina was detached. Blindness set in 4 months after the beginning of the disease, and then the globe was enucleated. Dantone.

1134. v. Forster. Albinism. *Zeh. klin. Monatsbl.*, Bd. xix, p. 389. Case of a girl, whose father was a dark blonde, the mother a brunette; 2 brothers and the children of a sister of the mother albinos. No consanguinity in the family; myopia of a higher degree, V considerably reduced, excellent perception of color down to the finest shades. Both discs blackish gray and surrounded by a broad white scleral ring. A congenital anomaly of formation is assumed as the cause.

1135. Gouvêa Hilario (de Rio Janeiro). Case of aniridia congenita of both eyes, with deficiency of the ciliary body and anterior part of the choroid. *Transact. of the Intern. Med. Congr.*, London, vol. iii, p. 120. Man 23 years old; complete absence of iris in both eyes, lenses dislocated upward, so that there is an aphakic space at the lower corneal margin. No sign of the presence of ciliary processes, nor of the anterior part of the choroid, while the posterior part is more or less normal, as are also the blood-vessels of the retina.

1136. Hänsell. Preliminary communication of experiments in vaccinating syphilis upon the iris and cornea of the rabbit. *G. A. f. O.*, Bd. xxvii, 3, p. 93. The experiments were made with the thin purulent contents of a gumma which was still intact. On the 25th day after vaccination iritis set in in both eyes, together with the growth of granulomas resp. papules and gummata in the ciliary body. When only the cornea was vaccinated, several small, very vascular nodules developed. The animal died after six months of marasmus. The lungs and liver were infiltrated with small tumors resembling tubercles. The same result ensued in about four weeks, when the secretion from plaques muqueuses, well-known for its high infectious power, or from particles of a still intact sclerosis was used. A characteristic difference between the syphilitic and tuberculous nodules consists in the much greater vascularization of the former, and in the tendency of the latter to caseous disintegration. Vaccinating with lupus produced no result whatever.

1137. v. HIPPEL. 4 cases of perforating sarcoma of the choroid. *Ber. d. ophth. Klinik zu Giessen*, 1881, Stuttgart, F. Enke, p. 35. 1. Woman 47 yrs. old, right eye, relapse. 2. Man 67 yrs. old, left eye, vascular round-cell sarcoma; nothing known of a relapse. 3. Woman 58 yrs. old, right eye, melano-sarcoma; no relapse after six mos. 4. Person 71 yrs. old, right eye. Relapse after a year in the lower lid, and a tumor in the right submaxillary region, also of a melano-sarcomatous nature.

1138. HOSCH. Primary sarcoma of the iris. *C. f. A.*, Bd. v, p. 361. It has developed in a person 66 yrs. old, at a spot upon the iris where a pigmentation of darker brown has existed ever since his youth. The tumor proved to be a pigmented spindle-cell sarcoma, which had not yet touched the choroid and ciliary body. The author assumes with Knapp the probability of a conversion of the normal pigmented hyperplastic tissue in the neoplasm during the later years of life. The newly formed pigment undoubtedly comes from the blood-vessels.

1139. HOSCH. A case of gumma of the ciliary body. *C. f. A.*, Bd. v, p. 365. The author adds six cases which were overlooked by Seggel in his bibliography in these ARCH. Patient 37 yrs. old; 7 months after infection a rapidly growing tumor developed under violent symptoms of inflammation of the iris and choroid, and soon reached the size of a small cherry. Energetic inunction (120 *grms.* of blue ointment and one *grm.* calomel were used daily) gradually reduced the size of the tumor until it finally disappeared entirely.

1140. MANDELSTAMM. Case of sarcoma of the choroid. *Petersb. med. Wochenschr.*, No. 17, 1881. The case, already reported in No. 827, was not one of a child, but of a man 30 yrs. old.

1141. MASSE. Des tumeurs perlées de l' iris. *Rec. d' Ophth.*, July, Aug., 1881. After an injury of the eye combined with a penetrating wound of the cornea, sometimes cysts develop upon the iris, sometimes solid tumors. Many intermediate stages exist between these two varieties, the serous translucent cysts and the epithelial pearly tumors. Some cysts are almost entirely solid and filled with fat and epidermis cells; the pearly tumors also contain epithelial cells, fat and crystals of cholesterine. The want of an enveloping membrane in the pearly tumors, which the author doubts, constitutes only an apparent difference. Masse reports a case of a pearly tumor of the iris, observed by himself, which had developed around three lashes; they had entered the anterior chamber through a wound and lay upon the iris. The author has shown by experiments upon rabbits, that when the lashes are deprived of the bulbs and brought into the anterior chamber, they do not cause the development of tumors of the iris; these are due to the presence of the bulb or small particles of the epidermis or conjunctiva. After introducing a piece of conjunctiva into the anterior chamber a cyst and pearly tumor of the iris developed in the same rabbit. MARCKWORT.

1142. MASSE, E. De la formation par greffe des kystes et des tumeurs perlées de l' iris. Bordeaux, A. Bellier, 1881. Treats of the same subject.

1143. RYMARKIEWICZ. Case of polycoria in the left eye. *Medycyna*, 1881. The normal pupil was somewhat displaced downward and inward, the second pupil was situated slightly upward and outward, was of an oval shape, with a

major diameter of 2 *mm.* and a minor of 1 *mm.* The pupil of the right eye is slightly dislocated downward.

1144. ULLMANN, GY. Un cas d' iritis diabétique. *France Méd.*, No. 44, Oct. 13, 1881.

1145. WICHERKIEWICZ. Traumatic or syphilitic irido-cyclitis? *Przeglad lekarsk*, 1881. In a case in which a piece of gun-cap had penetrated the cornea, iris, and capsule of the lens, symptoms of a syphilitic character developed. Under antisyphilitic treatment the symptoms of inflammation disappeared and V rose to $\frac{1}{3}$, thus showing that the foreign body had not induced the inflammation.

II.—GLAUCOMA.

1146. DEHENNE. De la sclérotomie. *Union méd. de Paris*, 1881.

1147. PRIESTLEY-SMITH (Sheffield). Acute glaucoma following concussion, cured by eserine. Transact. of the Ophth. Soc. of the Unit. Kingd. *The Lancet*, No. 25.

1148. SPENCER WATSON. Case of eyeball tension treated by sclerotomy. *Trans. of Clinical Soc. of London*, xiv, 5, 1881. F. 46, *R.* sclerotomy for acute glaucoma of 48 hours' duration, $+ T_2$. Section rather small and followed by slight prolapse of iris and bulging of scar. V improved from fingers to 4 Jaeger (with $+ \frac{1}{3}$) and $\frac{18}{10}$; $4\frac{1}{2}$ *yrs. later* V 4 *Jaeger and* $\frac{18}{10}$. Threatened glaucoma in *L.* kept in check > 4 years by eserine. O. D. of R. eye was pale soon after operation, and four years later was "pale and excavated."

E. NETTLESHIP.

III.—SYMPATHETIC OPHTHALMIA.

1149. KEYSER, P. D. Recovery from sympathetic ophthalmia. *Med. Bull.*, Philadelphia, vol. iii, No. 10.

1150. STORY and ABRAHAM. Micro-organisms in destructive ophthalmitis. *Brit. Med. Journ.*, Dec. 24, 1881, p. 1019. The authors point to the influence of micro-organisms in sympathetic ophthalmia.

IV.—LENS.

1151. ARLT. Spontaneous rupture of the anterior capsule of a cataractous lens. *Ber. d. Heidelb. ophth. Ges.*, 1881, p. 130. A cataract had slowly developed in a myopic woman, 34 years old; seven years earlier detachment of the retina had taken place. The spontaneous rupture of the capsule happened during the night. A linear section was made and a portion, consisting of cholesterine and fatty lenticular substance, removed. The eye remained good.

1152. CARRERAS-ARAGÓ. Lesion of the cornea, traumatic cataract, presence of a fragment of gun-cap in the lens, extraction of the foreign body and the lens, recovery. *Revista de Ciencias Médicas de Barcelona; C. f. A.*, Bd. v, p. 343. Extraction was performed 36 hours after the injury, when the lens was already perfectly opaque.

1153. CRITCHETT. Practical remarks on cataract. *The Ophthalmic Review*, vol. i, Dec., 1881, p. 21. C. divides his subject into two heads: 1.

Cataract during its period of formation. 2. Cataract when it has so far arrived at maturity as to justify operative interference. The first of these he then discusses under the head of "Preliminary Treatment of Cataract." He thinks we are too apt to treat cataract patients merely as subjects for operation, and that, consequently, they are often led to seek the advice of unscrupulous pretenders, who either promise to remove the opacity or to arrest its progress. He recommends a constant surveillance of the case from the time the opacity is clearly made out. He next considers the question as to how far it is expedient to inform the patient of the existence of the disease during its early stages. He concludes that it is impossible to lay down any hard or fast rule as regards this, for each case must be dealt with, as far as the exercise of judgment will permit, according to its own special requirements. With reference to the question as to what can be done for the patient in the way of palliative treatment, C. speaks of good results being often obtained by the employment of stenopœic glasses, with or without magnifying power. As regards the use of atropine, it is impossible to lay down any rule, but as a matter af policy, he inculcates discretion in prescribing it, and insists upon the importance of always ordering a weak solution, and never instilling it into both eyes at once. FITZGERALD.

1154. GOLDZIEHER. Ossification in the periphery of the lens. *Ber. d.* 13. *Heidelb. ophth. Ges.*, 1881, p. 155. In a globe enucleated on account of phthisis dolorosa the anterior surface of the lens was found covered with an osseous capsule. Total detachment of the retina and choroid due to the contraction of the cyclitic tissue.

1155. JANY. Contributions to the knowledge of diabetic cataract and its operation. *Deutsche med. Wochenschr.*, No. 49, p. 665. The author argues, as in a former paper, against considering diabetic cataract as a special form, at least not in older persons, and refers to a reported case. In young persons also they do not present any characteristic symptoms, although the rapid bilateral development would create suspicion. The operation is not contra-indicated even in cachectic individuals.

1156. PURTSCHER. A case of erythropsia after traumatic cataract. *C. f. A.*, Bd. v, p. 333. The cataract was absorbed spontaneously and completely. The pupil was perfectly black 2½ months after the injury, V — ½. One morning 5 months later he saw all objects red, and this continued for 3 days. Two weeks later, after being much heated, the same phenomenon without any ophthalmoscopic changes. V — ½. Report of a second similar case in senile cataract.

1157. RYMARKIEWICZ. Case of congenital partial cataract. *Medycyna*, 1881. Cataractous opacity in the upper inner quadrant of the lens of a person 22 years old, extending in shape of a sector almost to the centre of the lens.

1158. SCHÄFER (Heidelberg). Case of congenital unilateral zonular cataract. *Zeh. klin. Monatsbl.*, Bd. xix, p. 445. The fourth case thus far reported; observed in the left eye of a girl 6 years old, without any symptoms of rhachitis in the bones. The other eye was perfectly normal, as in the two cases reported by Heuse in *C. f. A.*, Bd. iv, p. 177. The peripheric opacities corresponded almost exactly to the stellate configuration of the lenticular sutures, as they are seen in the new-born.

V.—VITREOUS BODY.

1159. GIRAUD-TEULON. Contribution à l' étude de l' électrothérapie dans le traitement des opacités du corps vitré. *Bull. de l' Acad. de Méd. de Paris*, Séance, Oct. 18, 1881.

VI.—RETINA AND FUNCTIONAL DISTURBANCES.

1160. ABADIE. Traitement du décollement de la rétine par la galvano-poncture. *Soc. de Chir.*, Séance, Nov. 30, 1881. *Prog. Méd.*, 1881, No. 49, et *Gaz. Hébd.*, Dec. 9, 1881. Detachment of the retina frequently has a local cause; it is therefore open to surgical treatment. Abadie recommends galvano-puncture with a platinum knife for this purpose. The subretinal fluid is allowed to escape through an incision, so that the retina can re-adapt itself. The inflammation which then sets in is supposed to fix the retina in its position. Eight cases were treated; six chronic ones with transient good result, two cases of limited detachment with "satisfactory" result. As the tension was permanently reduced in these cases after the operation (perhaps without galvano-puncture, from the detachment.—REVIEWER), the author thinks of treating glaucoma in this way. MARCKWORT.

1161. ALEXANDER. Ischæmia retinæ. Cured by nitrite of amyl. *Deutsche med. Wochenschr.*, No. 40, 1881.

1162. ALEXANDER. Retinitis proliferans. Report of a case. *Deutsche med. Wochenschr.*, No. 40, 1881.

1163. BRAILEY, W. A. Some points relating to intra-ocular glioma. *Guy's Hosp. Reports*, vol. xxv, 497, 1881. The glioma cells are probably derived from the nuclei of the neuroglial basis-substance, not from the nuclei of Müller's fibres, nor from the true nerve elements; and when it invades the O. N. the connective trabecles remain free from infection. The vessels in glioma, unlike those in sarcoma, are surrounded by lymphatic sheaths, the cells contiguous to which are smaller and stain better than the more distant ones. Increase of neuroglial nuclei is observed in advance of glioma columns invading the O. N.; but when the growth invades the choroid there is no increase of nuclei in advance of it. B. thinks the neuroglial nuclei of O. N. take on the properties of the glioma cells. The *lam. crib.* is the chief obstacle to the invasion of the O. N., the growth being rapid when it has been passed. B. makes brief but important remarks on the conditions liable to be mistaken *during life* for glioma ("pseudo-glioma"). Of such conditions he mentions: (1.) Chronic irido-cyclitis, with formation of connective tissue in anterior part of vitreous, causing traction-detachment of retina and retraction of base of iris (clinically, this appears to be the commonest form.—REV.); (2) rarely connective-tissue growth from O. D.; (3) "spontaneous suppurative hyalitis" leads to detachment of retina; (4) rarely, spontaneous diffuse uveitis. Though T is nearly always — in pseudo-glioma, it is very rarely +; + T therefore does not invariably prove true glioma. E. NETTLESHIP.

1164. v. HIPPEL. Case of perforating gliosarcoma, tumor of the parotid gland and the ulna. *Ber. d. ophth. Klinik z. Giessen*, 1881, Stuttgart, F. Enke, p. 40. Girl, 8 years old; beginning observed three years ago; perforated a year ago. Exenteration of the orbit.

1165. V. HIPPEL. Case of hemianopsia homonyma dext. and heteronyma lateralis. *Ber. d. ophth. Klinik z. Giessen*, Stuttgart, F. Enke, 1881, p. 28.

1166. J. HUTCHINSON. On retinitis pigmentosa and allied affections, as illustrating the laws of heredity. *Ophth. Rev.*, vol. I, Nov., 1881, p. 2. After treating of the disease in general, the author reports his experience in regard to the influence of consanguinity upon the development of retinitis pigmentosa. He possesses the data of 23 persons or their families. Eight of these sprang from marriages among relatives, among whom there was no record of a previous case of the kind. Three of these patients were partially or completely deaf. In four of the eight cases only one person was affected; ten times, more than one member of the family was affected; twice, three children; 8 times, two children. In ten cases no consanguinity in the family could be proved by anamnesis, and among these, in five cases, two members of the family were affected. The author thinks that consanguinity is undoubtedly an important factor in the development of ret. pigmentosa, as it is for deaf-mutism and idiocy. E. NETTLESHIP.

1167. J. HUTCHINSON. Retinitis hæmorrhagica, especially in its relation with gout. *Med. Times and Gazette*, Dec. 10, 1881, ii, 675. Considerations and conclusions based on 24 cases (including the case in Jaeger's Hand Atlas, pl. xiv, fig. 65). Of this number 12 had had gout, 5 others were probably gouty, and in 7 no gouty history was obtained; 9 were over 60 years old, none less than 45; 13 males, 11 females. One eye affected in 17; both in 7. Gout probably predisposes to this affection through the medium of disease of blood-vessels, and "an incomplete thrombosis of the vena centralis" is probably the actual cause of the attack, suddenness of onset and asymmetry being in favor of this view. It differs from the relapsing intra-ocular bleeding of young adult males. H. refers to the possible connection of this latter disease, and also of hæmophilia, with gout, by the hereditary transmission of arterial disease.

E. NETTLESHIP.

1168. MACHECK. Retinitis pigmentosa. *Przeglad Lek.*, 1881. Of seven children of consanguineous parents, five are affected with ret. pigmentosa, hemeralopia, and atrophy of the optic nerve. The other two children (daughters) are well, and their children have normal eyes. Symptoms of hemeralopia first manifest themselves after the 10th year; the only boy became totally blind when 18 years old, while the sight of the four daughters was still moderately good in their 20th year. The eyes were mostly myopic, 5–9.5 D; all had nystagmus. The retinal deposits were accompanied in two cases by acute inflammation of the choroid, after strychnine had been tried for a time. Color-blindness was observed in 3 cases—once complete, twice partial.

1169. ST. MARENITSCH. Unilateral diffuse syphilitic retinitis, with complete loss of sight, cured in 48 days by the use of iodine and mercury. *Prot. d. med. Ges. in Wilna*, 1881, No. 3. HIRSCHMANN.

1170. MAS. An interesting case of amaurosis due to hysteria. *La Unión de las Ciencias Médicas* de Cartagena. Two successive attacks of amaurosis in consequence of hysterical eclampsia without any ophthalmoscopic changes, the one lasting 5, the other 31 days, the amaurosis disappearing suddenly each time. These cases also are open to doubt.

1171. MULES (Manchester). Retinal peri-arteritis. Ophth. Soc. of the United Kingdom. *The Lancet*, No. 25.

1172. OELLER. Hyaline degeneration of the blood-vessels as the cause of saturnine amblyopia. *Virchow's Arch. f. path. Anat.*, Bd. lxxxvi, pp. 329–359.

1773. REICH. Fall on the back of the head, large scotoma, partial neuro-retinitis, complete restitution of the power of vision. *Wöchentl. klin. Zeitung*, No. 17. HIRSCHMANN.

1174. REID and HUNTER. Embolism of central artery of left retina. *Glasgow Medical Journal*, Oct., 1881. An ordinary case of embolism with partial recovery, the important point being the history of numerous attacks of temporary total blindness of same eye, lasting from half an hour to two hours, and usually coming on after severe exertion; at least twelve such attacks occurred in the three months preceding the final "embolism."

(*Cf.* LORING, *Amer. Jour. Med. Sci.*, April, 1874; and Nettleship, *Brit. Med. Jour.*, June 14, 1879.—REV.) E. NETTLESHIP.

1175. SCHUBERT. Case of syphilitic retinitis. *C. f. A.*, Bd. v, p. 329, and *cfr.* this index, No. 391. Uncomplicated case of syphilis presenting the ophthalmoscopic changes seen in partial hemorrhagic retinitis, in which the hemorrhages do not attend the arteries, but belong to the last branches of the veins. At the same time there is a considerable diminution of the volume of the principal veins in some places, probably due to infiltration of the perivascular lymph space, while the arteries are perfectly normal. Cured by antisyphilitic treatment.

1176. SCHWEIGGER. The use of strychnine, with remarks on visual disturbances due to hysteria. *Zeh. kl. Monatsbl.*, Bd. xix, p. 415. The visual disturbance is simply due to the fact that the person is under the impression of being blind in one eye. When the contrary is to be proven by means of the prism and stereoscope, we must be on our guard not to let the patient become conscious of the object of the proceedings.

1177. SECONDI. Sopra un caso non ancora publicato di guarigione del distacco retinico. *Boll. d'Ocul.*, vol. iv, 3, Nov., 1881. Puncture after v. Graefe. The detachment was partial. Recovery, which could still be demonstrated two years later. DANTONE.

1178. PRIESTLEY-SMITH. Retinit. pigment. connected with a history of maternal shock. *The Ophthalmic Review*, vol. i, Dec., 1881, p. 30. In the history recorded by S. there was no constitutional nerve disorder in the earlier generations, and no consanguineous marriage. The mother of the cases he relates had borne two healthy children. She suffered a severe nervous shock during the early months of her third pregnancy; the child, and all the subsequent children, excepting one which died in infancy, developed retinitis pigmentosa with partial deaf-mutism. FITZGERALD.

1179. UNTERHARNSCHEIDT. The development of detachment of the retina in myopia. *Berl. klin. Wochenschr.*, No. 40, 1881, p. 585. The author concludes: If the ciliary muscle is suddenly relaxed when powerfully contracted (especially when wrong glasses are used or objects are brought excessively near), a reduction of the tension of the vitreous body ensues, which for the moment

is considerable, and which cannot always be compensated for by a corresponding contraction of the eyeball, because the increased tension, the bulging and its consequences have diminished the elasticity. As the elasticity of the scleral tissue, which acts as a regulator, fails here, the law of the "horror vacui," so to speak, comes into play, which suffices, when there is the predisposition, to detach the stretched retina from the choroid, whose connection with the retina has been loosened. If the accommodative strain continues, the slight elevation may develop into a bullous detachment of the retina. As the increased intra-ocular tension which accompanies the accommodative action also causes absorption of the vitreous humor, it becomes mainly the part of the stream of diffusion which sets in when the accommodation is suddenly relaxed to fill the vacuum created. The compensating fluid from the blood-vessels of the choroid would then increase the detachment, as the retina is no longer any obstacle. The author then discusses the therapeutics and prophylactic measures.

1180. DE VINCENTIIS. Sui gliomi della retina. *Movimento*, fasc. 9–10; published also in the *Ann. d' Ottalm.*, vol. x, 425.

VII.—OPTIC NERVE.

1181. ALEXANDER. Neuritis of the optic nerve. Case. *Deutsche med. Wochenschr.*, No. 40, 1881.

1182. CHAUVEL. Névrite optique double avec myélite aigüe temporaire. *Bull. de la Soc. de Chirurg.*, p. 512, 1881.

1183. W. EDMUNDS. Perineuritis optica. Ophth. Soc. of the Unit. Kingd. *The Lancet*, vol. ii, No. 17, 1881. In a girl 8 years old, who had been run over by a cab and died 24 hours later, in consequence of a fracture of the base of the skull, which did not extend into the optic canal, a dense infiltration between the sheaths of the optic nerve was found. The surface, especially of the nerve, was inflamed; slight choked disc. In all probability the meningeal exudation had entered directly the intervaginal space.

1184. GALEZOWSKY. Des thromboses vasculaires amenant des névrites optiques ou des signes d'embolie. *Transact. of the Internat. Med. Congr.*, London, vol. iii, p. 58. Among 99 cases of embolism the heart and its action were perfectly normal in 13 cases; but in 3 cases there could be shown a connection between the arterial embolism and pernicious malaria, in 3 with syphilis, once with a fall on the back of the head, twice with a severe mental shock, and in one with aortitis.

1185. C. HIGGENS. Three cases of simple atrophy of discs in the same family. *Lancet*, Nov. 19, 1881, vol. ii, 869. The 4th, 5th, and 8th children of a family of 10, born alive. S. began to fail at æt. 15 years, in the 4th, 11 in 5th, and 10 in 8th. No other symptoms than simple atrophy of discs with almost blindness; failure rapid in 4th and 8th, slow in the 5th. Mother, symptoms of syphilis soon *after* birth of No. 4. Nos. 6, 9, and 10 healthy; No. 7 died almost at birth; between Nos. 4 and 5 there were several miscarriages. Retinal blood-supply below normal. H. thinks the atrophy due to disease of blood-vessels. E. NETTLESHIP.

1186. v. HIPPEL. Embolism of the central retinal artery. *Ber. d. ophth. Klinik zu Giessen*, 1881, Stuttgart, F. Enke, p. 25. Sudden amaurosis of the

right eye in a person 30 years old without any disease of the heart or blood-vessels and without any affection of the kidneys. The one main arterial branch was devoid of blood here and there, and filled with some small red cylinders which slowly moved in a centrifugal direction. About one month later atrophy of the disc was plainly visible. The red spot at the macula was not observed.

1187. PONCET (Cluny). Myxome fasciculé du nerf optique. *Arch. d' Ophth.*, vol. i, No. 7, 1881. The author examined a tumor of the optic nerve, removed by v. Wecker from the left eye of a girl 16 years old. Visual disturbance in this eye when 3 years old, amaurosis for the last six years. The atrophic globe with the lids was united to the tumor, which was about the size of an orange. After detaching the anterior portion puncture at a point of fluctuation, when a large quantity of a yellowish transparent fluid was discharged. The whole neoplasm was confined to the subdural space, and consisted of a central round portion including the optic nerve from the entrance of the central artery to the optic foramen (22 *mm.* broad, 27 wide), and the surrounding hypertrophic arachnoidal tissue, which showed a cystoid degeneration. The nerve fibres were replaced by mucous tissue containing a great variety of cells within a reticulum, the walls of which consisted of the finest nucleated fibrils united in fascicles; these fibrils differ from connective tissue mainly in coloring, and are thought by the author to be derived from the cells of the neuroglia.

v. MITTELSTÄDT.

1188. SYMPSON. Double optic neuritis with cerebellar tubercle. Ophth. Soc. of the Unit. Kingd. *The Lancet*, vol. ii, No. 17. In a child 7 years old, which was suffering from albuminuria after scarlet fever, and which had received a severe injury of the skull one year before entering the hospital, headache, vomiting, and optic neuritis in both eyes, which slowly developed into atrophy. The autopsy showed marked hydrocephalus of the ventricles and tuberculous infiltration of the cerebellum.

1189. TH. WIETHE. Case of congenital deformity of the optic disc. These ARCHIVES, vol. xi, p. 70. In a patient with glaucoma in the right eye, the papilla of the left, which was hypermetropic to a high degree, and whose V=$\frac{1}{3}$, showed two blackish depressions of an elliptic shape within the substance of the optic nerve: one at the nasal end of the horizontal, the other at the lower end of the vertical diameter. The course of the blood-vessels across and out from the depressions was very strange. The author is inclined to assume a checked development.

1190. E. WOOD-WHITE (Birmingham). Embolism of central artery. Re-establishment of the circulation witnessed with the ophthalmoscope. *Ophth. Rev.*, vol. i, 1881, p. 49.

VIII.—INJURIES, FOREIGN BODIES (PARASITES).

1191. BECKER. Injuries of the membranes of the eye. *Inaug. Diss.*, Bonn, 1881.

1192. DAGUENET. Retinite traumatique. *Record d' Ophth.*, Dec., 1881. A soldier fell upon a tent-post with the outer side of the left orbit. Condition three weeks later: cornea and anterior chamber normal, subluxation of the

clear lens, numerous opacities of the vitreous, fundus veiled ; papilla indistinct, as it is covered by a whitish exudation ; two large ecchymoses in the retina, above the exudation no deposit of pigment, perception of light. Two weeks later, condition the same. 74 days later the exudation was surrounded by pigment, disc whiter than normal. Patient was not seen again. MARCKWORT.

1193. GALEZOWSKY. Des cataractes traumatiques. *Rec. d' Ophth.*, Dec., 1881, and Jan., 1882. General introduction. A foreign body in the lens frequently causes no trouble, therefore extraction should only be performed in those cases where the foreign body is clearly visible. It should first be extracted with a pincette or curette, and then the lens should be removed. In a patient, 38 years old, with subluxation of a traumatic cataract, Galezowsky wanted to perform an extraction. When the counterpunction was made, a considerable quantity of thin vitreous escaped. Galezowsky therefore withdrew the knife to the centre of the pupil, divided the capsule by a vertical incision, and then drew the knife from the anterior chamber. Good result.

1194. V. HIPPEL. Cysticercus in the vitreous body. *Ber. d. ophth. Klinik zu Giessen*, 1881, Stuttgart, F. Enke, p. 24. Eye free from irritation or pain, remnants of a former irido-choroiditis, perhaps due to an infection with recurrent fever. No operative removal.

1195. V. HIPPEL. Foreign body in the posterior section of the globe. Case. *Ber. d. ophth. Klinik zu Giessen*, 1881, Stuttgart, F. Enke, p. 55.

1196. FERNANDEZ, SANTOS. Amaurosis as the result of an injury in the periorbital region. *Crónica ophth. di Barcelona*, vol. i, 1881. The author concludes from his observations (four cases) and experiments, that amaurosis after an injury of the periorbital region is generally due to a lesion of the brain. Amaurosis with atrophy of the disc caused by it, is incurable.

1197. TALKO. Injuries of the eye in recruits. *Gaz. lekarsk.*, 1881. *C. f. A.*, Bd. v, p. 386. Injuries of the cornea by caustic potash, nitrate of silver, or bites of leeches, are frequently found among the Russian conscripts. An artificial trauma of the eye was proven in 16 cases out of 235 who were suspected of simulating, or 7%.

1198. I. C. WORDSWORTH. Defects of vision attributed to railway collision. *Proceedings of the Medical Soc. of London*, vol. v, 310, 1881. W. refers only to functional derangements (collectively = asthenopia) following severe shaking. He has never seen permanent defects of V, nor structural changes in the eyes in such cases. He has often found hypermetropia.

E. NETTLESHIP.

1199. ZSIGMONDY. Attempted suicide with a revolver. *Wiener med. Presse*, No. 46, p. 1449. Shot in the right temple with a revolver ; no reaction of right pupil, cornea dull, injured superficially, only quantitative perception of light. Ball in the cranium.

IX.—OCULAR AFFECTIONS IN CONSTITUTIONAL DISEASES.

1200. ABADIE. Du vertige oculaire. *Le Progrès Méd.*, No. 53, 1881 ; No. 1, 1882. Man 25 years old, the mobility of whose eyes in all directions is limited to a high degree and every effort attended with great dizziness

which, in upward movements, is almost increased to syncope. Ophthalmoscopic appearance and V normal. Cured by extr. bellad. and hydrotherapeutics. Similar observation made in a lady 50 years old; symptoms the same but less intense, but the sensation of dizziness also greatest when looking up. Eyes otherwise normal. Cured in the same manner. In a third case, a lady 51 years old, almost complete immobility of both eyes. Great photophobia, twitching motion upward when examined with the ophthalmoscope, followed by a deep swoon. No other cerebral disturbances found in any of the cases, but suspected. In one case of absolute immobility of both eyes, Panas found at the autopsy encephalo-meningitis of the cerebellum, especially in the region of the vermis inferior. v. MITTELSTÄDT.

1201. BETTMAN, BÖRNE (Chicago). Examination of the eyes in two cases of fatal anæmia (from the path. inst. at the Univ. of Heidelberg). These ARCH., vol. xi, 1, p. 12. Anatomical investigation; numerous poicilocytes and microcytes in the blood; many punctate and ribbon-shaped hemorrhages in the retina with partly white centre, œdema of the layer of nerve fibres, and formation of varicose nerve fibres. No fatty degeneration or other pathological changes could be found in the capillaries of the retina (as also by Quincke, Litten, Uhthoff), while Manz and Eichhorst have detected aneurismal dilatation of the capillaries. The yellowish central spots are due to: 1. A collection of well-preserved lymphoid cells in the centre of the hemorrhages, which surround them without any sheath. 2. A retrogressive metamorphosis in these aggregations of cells, and to secondary changes in the tissues. 3. The occurrence of large nests of varicose nerve fibres in the hemorrhages. He calls into requisition the discovery of Rumpf, who found that the action of lymph upon the nerve fibres produces swelling of the latter, in order to explain the development of these varicosities.

1202. J. CORNILLON. Rapports de l' héméralopie et de l' ictère dans les hypertrophies du foie. *Progr. Méd.*, vol. xi, No. 9. In four cases hemeralopia was observed some time after icterus had set in in hypertrophy of the liver. A description of the ophthalmoscopic appearance, however, is wanting, so that it can only be surmised that there was retinitis pigmentosa, as in cases of Landolt; *Graefe's Arch.*, Bd. xviii, 1, p. 325. MARCKWORT.

1203. DROSDOFF. Epidemic scurvy. *Journal of the Kasan Med. Soc.*, 1881, Nos. 14 and 15. From a report by Krückow. Among 200 scurvy patients, 28 with diseases of the eye. Besides hemorrhages beneath the conjunctiva and skin of the lids, 4 cases of keratitis serosa diffusa (one with a corneal ulcer), 2 cases of iritis, 4 of hemeralopia. HIRSCHMANN.

1204. DUNIN. Case of pernicious progressive anæmia in a laborer 38 years old. *Gaz. lek.*, 1881, Nos. 1 and 2. HIRSCHMANN.

1205. GOWERS. Chorea with optic neuritis. Ophth. Soc. of the Unit. Kingd. *The Lancet*, No. 25.

1206. v. HIPPEL. Affections of the eye in recurrent fever. *Ber. über d. ophth. Klinik zu Giessen*, Stuttgart, Enke, 1881. Among 193 patients, 23 cases = 11%, were observed with affections of the eye, most of them irido-choroiditis. Hypopyon was never observed. In 4 cases the ocular affection set in during the attacks; in the others, 1–4 weeks later. In 2 cases hemorrhages of the retina were observed. Result favorable in all cases.

1207. HIRSCHBERG. Tuberculous inflammation of the eye. *Transact. of the Internat. Med. Congr.*, London, 1881, p. 117. Among 1,700 patients 3 cases, one of the conjunctiva bulbi, one of the iris, and one of the choroid. The diagnosis was confirmed in each case by the anatomical investigation. In 3 cases swelling of the lymphatic glands was observed as a secondary symptom, so that it is advisable to remove tuberculous deposits as rapidly as possible by operation. The changes in the eye are undoubtedly of a specific character.

1208. HUNNIUS, H. The symptomatology of affections of the pons, and the conjugate deviation of the eyes in cerebral diseases. Bonn, 1881. Cohn & Son. Compare.

(1208 *a.*) O. LEICHTENSTERN. The conjugate lateral deviation of the eyes in cerebral diseases. Sitzungsber. des allg. ärztl. Ver. Cöln, 23. Mai. *Deutsche med. Wochenschr.*, No. 44. Hunnius reports cases of his own, and after giving a résumé of the bibliography, he discusses the question whether the conjugate paralysis of the abducens and internal rectus is of diagnostic importance in diseases of the pons. Based upon his observation he modifies Prévost's conclusion by adding that in lesions of the cerebral lobes there may be insufficiency of the lateral motion, even when there is no conjugate lateral deviation of the eyes. The knowledge of the lesions of the corp. quadrig. is not sufficiently accurate yet in regard to the symtomatology of the paralyses of the muscles following them, so that the position of the eyes is of little use in diagnosticating diseases of those parts. In regard to lesions of the pons, Hunnius and Leichtenstern assert that when during unilateral convulsions head and eyes deviate to the other side, the diagnosis may be made that the cause of the irritation lies in the pons. There is, undoubtedly, a common centre of the abducens and oculo-motor nerves in the pons; it lies probably very near the abducens-nucleus.

1209. A. KEY. Case of retrobulbar glioma. *Hygieg*, Stockholm, 1881, No. 4, and *Nord. med. Arkiv*, vol. xi, No. 15, pp. 20 and 29. Treats of metastases of tumors of the eye in the cerebro-spinal system.

1210. LUCHHAU. Diseases of the eye and ear in recurrent fever. Ver. für wissensch. Heilk. z. Königb. *Berl. klin. Wochenschr.*, No. 43. Among 180 patients, 6 cases with diseases of the eye during the attack, in 3 iritis in one eye (once with hypopyon), in 2 optic neuritis of both eyes, and in one iritis in one eye with hypopyon during the first attack, from which recovery was complete, and during the second attack irido-cyclitis and neuro-retinitis in both eyes.

1211. MACHECK. The changes in the retina visible with the ophthalmoscope in rabbits poisoned with bacillus anthracis. *Kronika lek.*, 1881. Fine blood-vessels began to develop in the retina which thus far had been invisible, then general anæmia of the retina ensued, in consequence of embolism of the capillaries of the lungs.

1212. J. A. ORMEROD. The diagnostic symptoms of tabes dorsalis. *St. Bartholomew's Hospital Reports*, vol. xvii, 39, 1881. O. directs his attention in this interesting paper chiefly to the absence of the knee phenomenon and *affections of the pupils* in the early stages of tabes. He observes, in the first place, that (as is known) the true "Argyll Robertson pupil" (a small pupil with associated,

but with no reflex action) is subject to variations; it may be larger, but act as above, or it may be motionless to associated as well as to reflex stimulus. In 8 cases with marked incoördination, reflex action of pupils lost or feeble, associated action normal in 6; both actions wanting or feeble in 2. In 4 with slight incoördination, reflex action lost, associated action normal 2; both feeble 1; variable 1. In 4 with other symptoms but no incoördination, reflex action lost or feeble, associated action normal in 3; both absent 1. In 21 cases optic atrophy in 4; 6 patients were more or less deaf, 2 of them having optic-nerve atrophy. E. NETTLESHIP.

1213. J. HUGHLINGS-JACKSON. On tumors of the cerebellum. *Proceedings of the Medical Soc. of London*, vol. v, 50, 1881. The point of special ophthalmic interest is the author's statement that he has never seen defective V in cerebellar tumor without optic neuritis; this in reference to the hypothesis that such tumor, especially if of the middle lobe, might cause blindness by pressing on corp. quadrigem. E. NETTLESHIP.

1214. OSTERWALD (Prof. Leber's clinic). Another case of leucæmia with bilateral exophthalmus due to orbital tumors. *G. A. f. O.*, Bd. xxvii, 3, p. 203. In a child 4 years old exophthalmus and swelling of the lids had developed after an injury. In consequence of the former affection ulceration of the cornea set in. Tumors protruded beneath the skin of the upper lids, and a similar tumor lay embedded in the skin of the temporal region. The ophthalmoscopic condition of the right eye could not be exactly determined; in the left there was slight choked disc. The amount of the exophthalmus was about 2.5 *cm.* The microscopic examination of the blood showed marked leucocythæmia. Cells replete with movable micrococci were found. The autopsy revealed tumors of the epicranium, of the transverse and cavernous sinuses, and on the external surface of the dura mater. Numerous hemorrhages in the retina and in all organs of the body. Choked disc in both eyes. Leucocythæmia of myelogene character. Numerous micrococci in the blood, spleen, and leucocythæmic tumors.

1215. RIEGER und v. FORSTER. Eye and spinal cord. *G. A. f. O.*; Bd. xxvii, 3, p. 109–202. The authors endeavor to prove, basing their assertions on their own clinical observations and experiments, that the ocular symptoms observed in diseases of the spinal cord, which manifest themselves as affections of the optic nerve, muscular paralysis, and the pupillary phenomenon, may be traced directly to an affection of the spinal cord. This direct connection is effected by the vaso-motor nerves, as the circulation in the fundus of the eye is regulated by the spinal cord, as they endeavor to show by experiments. In a similar manner Mooren has recently tried to explain the connection between affections of the eye and the uterus by means of the reflex theory; *cfr.* No. 938. The authors then review the characteristic symptoms of the three groups mentioned above; they consider it of importance for the differential diagnosis of the neuritic stage of the affection of the optic nerve, that the inflammation of the nerve reaches a higher degree when due to meningitis than when due to a spinal cause. In the latter case atrophic portions may almost always be found beside those which are in an inflamed condition. The functional examination shows more characteristic symptoms. Then they treat of the phenomenon of the reaction of the pupil for light and convergence, of the very variable

paralysis of the muscles, and finally of the connection of syphilis with this subject, in which they express themselves very favorably upon Erb's view. All investigations of other observers, however, are criticized adversely whenever they do not agree with their own theory. A very superficial criticism of a paper of the reviewer, contained in these ARCHIVES, vol x, p. 622 (German edition) is answered in *G. A. f. O.*, vol. xxviii.

1216. E. A. WOODS. Tuberculous tumor (?) of left optic thalamus. *Lancet*, Nov.19, 1881, (ii, p. 867). Optic neuritis of right eye, with dilated pupils active to light and accommodation. Hyperæsthesia of part of right face; anæsthesia of lower part of right face and whole of right side. Absence of right knee reflex and of cremaster reflex. Athetoid condition of right hand, etc. Patient living. E. NETTLESHIP.

1217. ULLMANN. Un cas d'irite diabétique, *France Méd.*, No. 44, Oct. 13, 1881.

1218. ZAUFAL. Value of ophthalmoscopic examination for the diagnosis, prognosis, and therapeutics of diseases of the ear. *Prager med. Wochenschr.*, Bd. vi, No. 45, p. 448. When an inflammation of the middle ear spreads to the meninges, the eye of the same side is first attacked; generally, however, both eyes are affected. After trephining the mastoid process the hyperæmia of the corresponding eye vanishes more rapidly. Almost all cases of otitis media, with or without caries, which lead to meningitis and thrombosis of the sinus, are complicated with affections of the fundus of the eye.

MISCELLANEOUS NOTES.

The meeting of the German Ophthalmological Society will take place at Heidelberg Sept. 14–16 of this year.

The meeting of the American Ophthalmological Society will take place at the Fort William Henry Hotel, Lake George, N. Y., July 26th and 27th, preceded by the meeting of the American Otological Society at the same place.

The National Eye and Ear Infirmary of Dublin—one of the oldest institutions of the kind in the United Kingdom, having been established in 1814—has been removed to its new premises in Molesworth Street. It has now twelve male and twelve female beds, and a private ward for a pay patient. The dispensary department has been extensively improved.

The Baltimore Charity Eye and Ear Dispensary, in charge of Dr. Samuel Theobald; the Eye and Ear Department of the Baltimore General Dispensary, in charge of Dr. S. L. Frank; the Eye and Ear Dispensary of the Church Home, in charge of Dr. Russell Murdoch; and the Baltimore Throat Dispensary, under the man-

agement of Drs. J. H. Hartman and Samuel Johnston, have been consolidated under the name of the Baltimore Eye, Ear, and Throat Charity Hospital. In the management of the new institution these gentlemen will be assisted by Dr. I. Bermann as ophthalmologist and aurist, Dr. John N. Mackenzie as laryngologist, and Dr. W. D. Boker as pathologist.

Dr. H. Knapp has been appointed professor of ophthalmology in the Medical Department of the University of the City of New York, in place of Prof. D. B. St. John Roosa, resigned.

The monument of the late Prof. A. von Graefe, in Berlin, was unveiled on his birthday—which would have been his fifty-fourth —May 22d. The oration (H. Peters, Berlin), delivered by his successor, Prof. C. Schweigger, describes in an admirable, concise manner Graefe's short but unprecedentedly brilliant career, and sketches the development of modern ophthalmology, of which Graefe, in conjunction with Helmholtz and Donders, was the chief representative.